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MICROCOMPUTER MANAGEMENT INFORMATION SYSTEM FOR A UNIVERSITY ALLIED HEALTH CLINICAL TRAINING PROGRAM

by

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Dissertation

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CHAPTER I

DESCRIPTION OF THE DOCTORAL PROJECT

In higher education, programs and departments are facing increased accountability demands, and this trend is also evident in allied health programs. Through the introduction of computerized information systems and the flexibility of the microcomputer, it is possible to develop management information systems for individual university departments and programs. Such a system permits the development of a stand-alone microcomputer program to meet a variety of administrative needs for specific departments or programs in the university.

One such need is in the allied health programs which have both academic and clinical components. A stand-alone microcomputer system provides a "user friendly" system that improves program or departmental management capabilities by increasing the speed and accuracy of data collection retrieval, and report generation. Before the development of the microcomputer, data collection and report writing were tedious processes. Since the microcomputer represents contemporary state-of-the-art technology, soft-ware has not been developed to meet specific program requirements.

Through the use of a stand-alone microcomputer, a university department or program can develop its own data base

information system. This system is not linked to the main frame computer used by various administrative services. The stand-alone data base and report writing capability may or may not be compatable with the main frame program. As a stand-alone system, the department or program can use the computer equipment when needed and can modify the programs for specialized purposes. This doctoral project develops such a management information system for a stand-alone microcomputer.

In the development of an allied-health management information system, three concerns are addressed. The departmental and clinical administrative needs reflect the range of data and reports needed by adminstrators and the clinic coordinator. The second concern is the collection and storage of student clinical records which is required for professional licensure. The third concern is designing a system compatable with medical record filing protocol for client data collection, and to provide transmission of clinical data between facilities. This doctoral project develops a stand-alone microcomputer management system that improves entry, storage, retrieval, and report generation for various uses.

Statement of the Problem

Universities and other institutions of higher education provide professional training in a number of allied health disciplines including physical therapy, occupational therapy, speech-language pathology, and respiratory therapy. These disciplines have both academic and clinical training

components, which may or may not include site training facilities away from the institution. Since the 1980s, various management information programs were reported in the literature but none addressed all areas: administrative, student, and medical records. In addition to these constraints, most of the programs did not use the microcomputer.

Through the use of a stand-alone microcomputer management information system, institutions are able to develop specific programs for various disciplines. A comprehensive management information system for allied health professions is needed to complement existing computerized programs. As rehabilitative disciplines in institutions of higher education, they must document the academic and clinical experiences of students, as well as maintain accurate clinical records. Through the use of the system, previously unavailable or labor-intensive, reports can be generated, documenting multiple management functions.

For the institution, a management system provides comprehensive information to justify programs and document compliance to professional certification boards. Typically, academic and practicum training requirements have become both the responsibility of the institution and the discipline's professional organization's training standards which are part of the student's licensure requirements. For the discipline of speech-language pathology, the professional organization publishes specific requirements for both academic and clinical training which a student needs for professional

licensure. The academic program, therefore, has the responsibility to collect, store, and retrieve all records pertinent to the student's credentialing and document compliance with professional training standards.

For the professional training program coordinator, department head, or college administrator, data are generated for various management parameters. These parameters have become increasingly important due to the need for program justification and include such items as student/supervisor ratio, supervision hours/credit hours, student/client assignments, and financial management. For the clinic administrator, data are available for various client demographic parameters, clinical management procedures, and student clinical experience. Additionally such a system interfaces with other practicum sites so data can be shared on both clients and clinicians.

One of the problems in data retrieval is access to a computer and computer technology. With the development of the microcomputer, stand-alone systems are used by departments and programs without using the computer center. This availability creates a need for information systems to meet specific requirements from administrators, students, and client medical data.

The problem this project addresses, is linking a microcomputer management information system to an allied health discipline, speech-language pathology, to demonstrate program applicability for administrators, students, and clinical record keeping. The system serves the clinical component of the university program.

Purpose of the Project

The purpose of the study is to develop, implement, and evaluate a management information system's model for a stand-alone microcomputer system. The system is designed to collect, store, retrieve, and transmutate significant clinical transactions of clients and clinicians in a university training program. Reports, generated from the data, assist clinic coordinators, department heads, and student clinicians in the documentation of service delivery and clinical experience. This model demonstrates the innovative use of microcomputers in one administrative area to handle specialized departmental data.

To accomplish the purpose, activities were completed in five areas:

1. Selection of the clinical areas which would be included in the management information system

2. Development of a model and flow chart for the management information system

3. Implementation of the model for a field test of the data system

4. Evaluation of the usefulness and effectiveness of the model by a committee of representing medical records, students, speech-language pathology, and administration

5. Recommendation for changing the model based on the results of the field testing and the evaluation.

Significance of the Study

This project demonstrates the use of a stand-alone microcomputer in the allied health discipline of speech-language

pathology to improve clinic resource management, to store student clinical records, and to interface with other health systems. This project integrates a management information system with a recording format that coded client and clinician data for multiple data reporting. The project also provides increased information for:

1. The collection, storage, retrieval, and transmutation of clinician and client information

2. The writing of a "user friendly" procedure manual

3. The report formats for administrative and student records.

As a result of this study, a management information systems packet was developed for use in other university speech-language pathology programs. This management information system for clinical management could be modified for use by other allied health disciplines with adaptations primarily to the coding system.

Methodology Discussion

This doctoral project followed the research and development format as presented by Borg and Gall (1979). Their format included the following steps:

1. Develop a set of specific behavioral objectives or specifications that the eventual product should achieve.

2. Conduct research or review previous research to establish a research base for the product, to discover the deficiencies of current products and identify approaches that are likely to overcome these deficiencies.

3. Develop a new product to the point where one may reasonably expect that it will accomplish its objectives.

4. Test this product in the setting where it will eventually be used and evaluate its effectiveness in meeting its objectives in this setting.

5. Revise the product on the basis of the field-testing results.

6. Repeat steps 4 and 5 until the product's objectives have been achieved or until it has been established that the approach being used will not achieve them.

7. If it is successful, put the product into operational use. This often requires further development and testing of a program to train school personnel in the use of the product. (p. 35)

This format forms the basis for the project. The project's sequence is based on the format and the activities stated in the purpose section. The sequence is as follows:

1. Developing a set of objectives that the management information system should achieve

2. Reviewing the literature in medical records, management information systems, speech-language pathology clinical management, and higher education

3. Developing the management information system model and flow chart to be implemented

4. Implementing the model process and flow chart in an initial trial with five clients and three students

5. Revising the model after an initial trial

6. If necessary, revising and refining before implementing in the clinic

7. Using the model in the speech-language pathology program with a client enrollment of approximately 35 clients and 20 student clinicians.

Step One: Objectives for the Management Information System

The objectives reflect the administrative and student clinician needs for reports generated from the data. The objectives are based on a review of the literature and the specific needs of the Western Kentucky University Communication Disorders Clinic. Administratively, the objectives reflect both departmental and clinical needs. For the student clinician, the objectives are written to assess the permanent record keeping system as well as other reports on clinical activity, such as types of tests administered. The objectives include:

Administration.

1. To develop a service delivery recording format to collect pertinent administrative information

2. To develop a recording format to collect financial data that stored and generated records and billing forms

3. To be able to generate timely and accurate reports at the request of various administrators.

Students.

1. To develop a recording format for accurate and timely data recording

2. To develop procedures for training clinicians, and a flow chart to depict the entry and reporting processes

3. To write a manual that explains each data item in a medical records abstract format

4. To generate reports for the storage of clinical clock hours and other pertinent information.

Step Two: Review of Literature

The literature review from various fields and professions provides background information. The literature review, Chapter II of this project, is considered an integral component of the methodology for a project by Borg and Gall (1979).

Step Three: Development of the Model and Flow Chart

The development of the model and flow chart required a review of the literature, a needs assessment, and a preliminary draft of the procedures. This resulted in the formulation of a model, and flow chart of clinical record keeping and reporting.

Step Four: Implementing the Project in a Pilot Study

The implementation phase included the use of the model, the procedures, and the management information system manual with five client records which were the responsibility of three student clinicians. The trial consisted of the following aspects:

1. Determining the clinicians and clients
2. Orienting the student clinicians to the record keeping system
3. Training the student clinicians to use the manual
4. Entering the data into the recording abstracts for diagnostic intake and therapy.

Upon completion of the implementation phase, the model and flow chart were evaluated by clinicians. Changes in the project reflected the evaluation.

Steps Five and Six: Process Revision

After completion of the pilot, the project components were revised to reflect the evaluation, which corresponds to step five of the research design. Consequently, modification resulted in simplified reporting formats and coding revisions.

Step Seven: Implementing the Project and Evaluation

The database information system was implemented for the summer clinic at the Communication Disorders Clinic. The Clinic enrolled approximately 40 clients and 20 students were enrolled for clinical practicum. The students were trained according to the procedures delineated in Chapter III. Data were entered into the microcomputer for storage and report generation.

The project was evaluated by a review committee. The composition of the committee and the evaluation format was included in Chapter III. The general format for the evaluation included these four items:

1. Completion of activities and strategies to meet objectives

2. Comparison of the formats and procedures before and after the pilot study

3. Listing the types of information and examples of reports available by using the microcomputer management information system

4. Evaluation by the review committee to determine strengths and weaknesses of the model, flow chart, manual reporting format and reports.

Section Conclusion

This section presented the problem addressed by this dissertation. The problem was defined as using a stand-alone microcomputer database information system to improve the university's management capability for an allied health program, specifically the clinical training component. The methodology for the project was based on the Borg and Gall's recommended research sequence. The section concluded with the delineation of the objectives and sequence of the project.

Definition of Terms

For this project several terms need definitions to explain the concepts presented throughout the remainder of the study.

Management Information System--a system which accepted data as raw material and, through one or more transmutation processes, generated information as a final product (Firman & Linn, 1977).

Algorithm--an orderly step-by-step procedure, usually expressed in mathematical terms, that consists of a list of instructions for accomplishing a desired result, or for solving a problem.

Data--facts collected from observations and measurements (Tsichritzis & Lochovsky, 1977).

Information--the meaningful interpretation and correlation of data that allows one to make decisions (Tsichritzis & Lochovsky, 1977).

Abstract--an instruction book detailing objectives, processing, steps, forms, and schedules for records management (Gill, 1981).

Reports--the collection of data from records to meet specific request from administrators and students

Intake Form--the format for recording diagnostic and demographic information for a particular client.

Therapy Form--the format for recording significant therapeutic and financial transactions for a particular client.

Billing Statement--the recording format used to collect and store all financial transactions for a particular client.

Floppy Disk--a thin sheet of plastic impregnated with ferrite, which when magnetized is a means of storing words and numbers (Gill, 1981).

Record--information in any format (paper, computer tape, microfilm, floppy disk) which has been generated or received by someone and deemed important enough to be saved for a specified time period (Gill, 1981).

Organization of the Study

The project report is divided into four chapters. The description of the study is presented in Chapter I. In Chapter II, the review of literature summarizes pertinent information from related fields. Chapter III presents the development of the model, and the implementation and evaluation of

the model in the pilot test. The final chapter, Chapter IV, discusses the revision of the process and its operational use in the communication disorders clinic. Chapter IV also contains the committee recommendations, and a summary closes the paper.

Limitations of the Study

This doctoral project applies a "state of the art" microcomputer management information system to a higher education training program in an allied health discipline. This study is limited to one allied health field, speech-language pathology to demonstrate the feasibility of a stand-alone management system for clinical management and student clinical clock hour storage. The management information system can be updated to meet changing demands. Additionally, further development of the system depends on the expansion of the management system.

This system can be used by any university or college training program in speech-language pathology. With modification or elimination of the diagnostic and treatment codes, the system can be used by an allied health clinical training program having a microcomputer. The management information system is available for the Radio Shack TRS-80; the system is being adapted for other microcomputers as well.

CHAPTER II

REVIEW OF RELATED LITERATURE

A review of literature is defined as an essential component of research and development projects. This chapter is divided into four topic areas: management systems, higher education, medical records, and allied-health/speech-language pathology. These areas provide a multidisciplinary base for the development of the doctoral project.

Management Information Systems

In organizations, managers establish organizational and unit goals that effectively marshal human, financial, and information resources (Anthony, 1981). By using these resources to achieve organizational goals, managers attempt to achieve both with effectiveness and efficiency. To attain both effectiveness and efficiency, managers need information. They must gather, analyze, synthesize, and accurately interpret data from many areas including services, financial management, and personnel.

To accomplish this goal, information must be managed as a resource. A concept which encompassed this goal is the management information system (MIS). Such a system accepts data as raw material and, through one or more transmutation processes, generates information as a product (Firman & Linn,

1977). All organizations must be managed and the information system assists in the process of management. According to Murdick and Ross (1971), the purpose of an information system is to select, store, process, and retrieve data to reduce the uncertainty in decision making by yielding information for managers at the time they could most efficiently use it.

Such a system is composed of the following functional elements:

1. Perception-initial entry of data, whether collected or generated into the organization,
2. Recordation-physical capture of signs and symbols,
3. Storage-presupposes some expected future use, recordation and a location. (Firman & Linn, 1977, p. 313)

Since the management information system provides managers with information through the collection, storage, and generation of reports, criterion for effectiveness should be established. According to Sisk (1973), an effective information system incorporates the following five components:

1. An Input Device which places information into the system
2. A Storage Unit which provides for the accumulation of information
3. A Control Unit which selects the proper information from the storage unit and controls the operations of the processing unit
4. A Processing Unit which handles and interprets the data
5. An Output Device which presents the original information in usable form after it has been processed. (p. 212)

The MIS provides the necessary intelligence on a timely basis to help management plan, execute, and control (Konvalinka & Trentin, 1977). An operational definition of a management information system is a system of reports specially designed to help management. This means that these systems are frequently position or department oriented to meet specific requirements. According to Simon (1977),

> as computers become cheaper and more plentiful, and as we learn to program them to behave more flexibly, they will be able to assume a larger part of the task of day-to-day operation of the information processing factory. (p. 225)

The Network Data Model

The organization of data, represented as a data model, is an attempt to logically place information in a context. Information which has an independent existence and can be meaningfully considered by itself is interpreted as set(s) of entities. According to Tsichritzis and Lochovsky (1977), an entity set is described in terms of its attributes which have a certain attribute or value. For example, the entity set of houses can be described by attributes such as address, color, size, location.

In data base management information systems, two models are used, the relational and the network data model. The relational data model is a formal model used for representing relationships among attributes of an entity set and the associations between entity sets. The relations could have relationships ranging from unary to n-ary relationships. Relations, then, differ in degree. For example, in student

records, relationships could differ in unary relation in courses, in binary relation by persons, and ternary relation by home address (Codd, 1974).

The network data model describes the relationships between entity sets and attributes. The network data model is defined as a formal model which represents attribute relationships of an entity set and the association between the entity sets. The data model consists of record types and links. Record types represent the relationships among the attributes of an entity set. Links represent the associations between entity sets. In the network model, the record type is the collection of data items, and the data item is the smallest unit of logical data. This model is based on filing systems and appears in most existing commercial systems (Tsichritzis & Lochovsky, 1977).

When a system is developed, a system design is followed to provide a complete definition of information maintained in the system and provide a target for languages used to manipulate that information. The system design is based on objectives. The objectives (Hutt, 1979) are formulated in the following statements:

1. The Objective Environment. The designers start by identifying the perceived field of the new Information System and define the real work objects which exist within it. Having achieved this, the designers then identify the information which is associated with those objects. A formalization of the objects and information results in the Object Environment.

2. The Information Environment. Having completed the Objective Environment, the designers define a number of entity sets. These entity sets should be

defined so as to model the Objective Environment as closely as possible.

3. The Encoded Environment. Once they have defined the Information Environment, the systems designers are now in a position to consider the usage of that environment. In the first instance, this entails producing a statement of the most frequent requests for information, together with details of the amount of information to be processed. From this the system designer may either design a number of encoded entity sets which will satisfy the workload or the use of a data base monitor to simulate the effect on the system and thus identify and required coded entity sets. This results in a definition of the first Encoded Environment. Once this has been used, the system will allow either automatic or system designer-assisted changes to be made to this environment which will thus improve the effectiveness of the system.

4. The Stored Environment. Once they have defined the Encoded Environment the system designers have defined the contents and rates of use of the encoded entity sets. They are now in a position to design the indexes, and identify the storage structures and the mappings required to support this level of activity. The result of this work is to define a number of stored entity sets which are to be maintained by the lowest levels of the system.

5. The External Environment. The Information Environment contains a number of entity sets which model the Object Environment as closely as possible. The External Environment contains a number of views of these entity sets which represent the data needs of particular groups of system users. These views are expressed using the normal languages supported by the system.

6. Software Environment. All the other environments are concerned with the definition of data and the identification of software which operates on this data. The Software Environment contains a model of all this software in the form of hierarchical trees and thus encourages the use of top-down design techniques and structured programming. The algorithms held in the Software Environment are in a form suitable for adding to the system as and when required. (p. 14)

For any management information system, the design is written based on the objectives and the specification of

those six environments (see Figure 1). In this design process, the environments provide the main interfaces to the system and allow for change in an environment which affects only the environments below it (Stanfel, 1983).

The Design Process for Management Information Systems

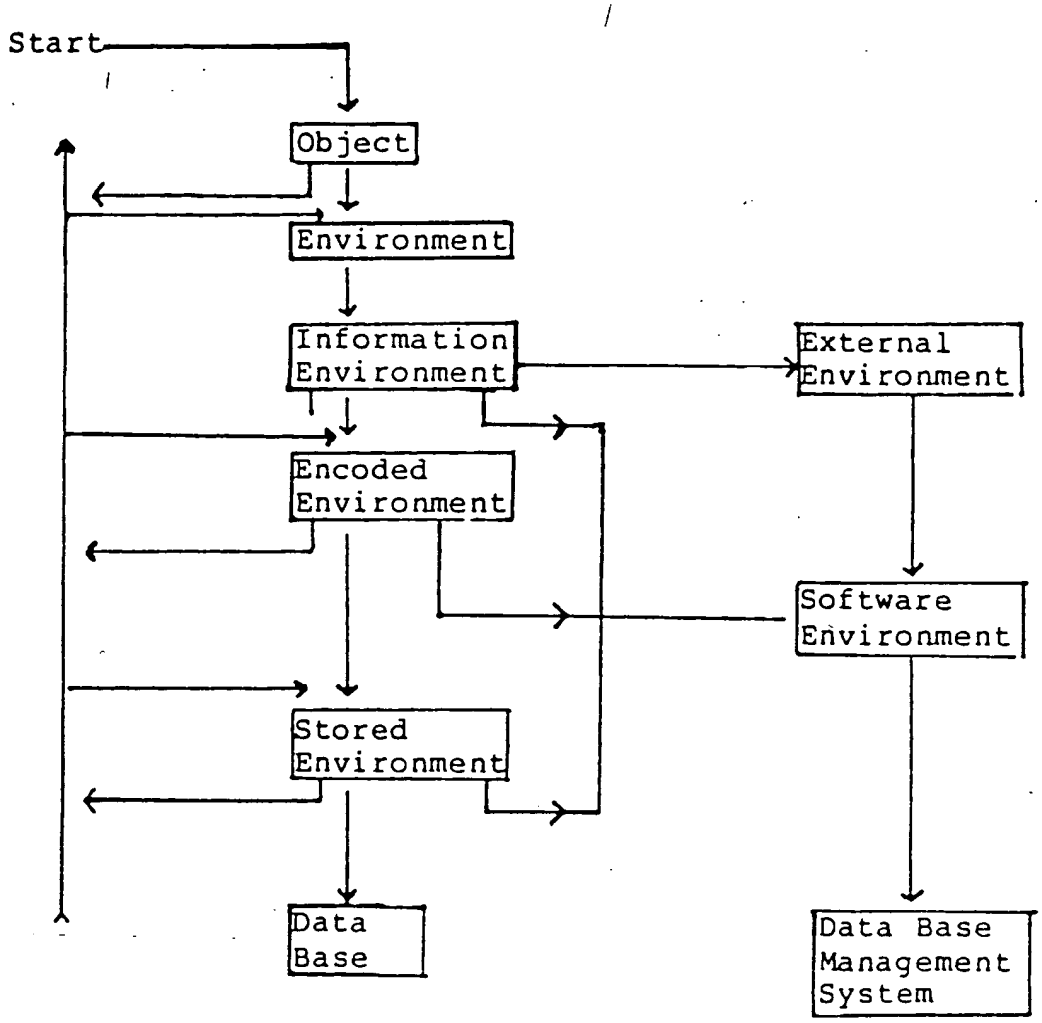


Figure 1. The design process incorporating the six objectives for design methodology. (Stanfel, 1983)

Extracting data from the data base in order to process a request requires the use of a large number of small algorithms. Some of these algorithms are responsible for validating domain values, others are responsible for set encoding, while others are responsible for maintaining stored entity sets (Hutt, 1979). The system designer writes the algorithms to control and organize the data.

Data base management systems are written using algorithms as a program flowchart since they validate, encode, and maintain stored entity units. A system uses algorithms when a design is formulated using the objectives and environments. A management information system, then, is governed by the development of interfaces supported by the system.

Management Information Systems and Education

Although the potential of computers in education has been documented, the computer did not seriously influence education until very recently. The introduction of the relatively inexpensive microcomputer into the market place prompted a re-examination of the computer's potential value in education (Watts, 1981). Improvements in hardware reliability and the capabilities of the microcomputer, have permitted institutions to utilize various computer networks for specific functions (Kniefel & Just, 1979).

Data Retrieval Systems

Microcomputers provide individuals in the information professions, the ability to serve users in more efficient and

effective ways (Bivins & Erikson, 1981). In a study by Hardy (1982), he found that the ease of accessing information has greater importance to information seekers than the amount of information available. The criteria in the design and implementation of a data retrieval system, therefore, should include: a user friendly interface, aids to train beginners on the system, versatility in output media, and error recovery techniques in an interactive session (Radhakrishnan, Grossner, & Benoliel, 1982). According to Griffiths (1980), there is

> the increasing realization among the user community of the benefits to be derived from decentralized, distributed processing, using low-cost minicomputers as opposed to the conventional approach of timesharing a single large centralized system. These benefits include improved cost/performance, reliability, and flexibility. (p. 20)

Section Conclusion

This section discussed management information systems and their use to achieve organizational goals. The network data model was explained and served as the foundation of the management information system used in this doctoral project. Finally, the use of management information systems in education was explained, particularly with the introduction of microcomputers.

Higher Education

Higher education, like other organizations, needs management information systems. Higher education administrators appear to have little choice in increasing computer technology

uses in the administration of their institutions. These administrators face challenges in the 1980s different from those in the 1960s and 1970s. Four primary factors (Gratz, 1981) accounting for these different challenges include:

1. For most institutions, the era of growth was over and administrators were faced with static or declining enrollments.

2. The general economic situation, in which today's dollar buys less than one-half of what it did in 1967, was combined with increasingly tight public treasuries.

3. The "accountability complex" characteristically called upon institutions to supply more and more information to external agencies.

4. An increasing variety of functions were attributed to or demanded of higher education. (p. 12)

Administrators began to rely on computer technology as they coped with increasing tasks and responsibilities. As an organization, an institution is required to manage information in a broad spectrum of administrative, academic, and student needs. Every aspect of university life, from decision making to the learning/teaching environment, is affected (Robinson, 1981). Computers in education are used most frequently in the areas of management, instruction, and research (Joiner, Miller, & Silverstein, 1980). According to Dahl, West, and Lampert (1977):

> In reality, only in the last decade have leaders in universities and colleges come to realize that the ability to quickly process data into meaningful information offers a powerful tool for the support of their primary activities of planning, controlling, and operating the institution. (p. 45)

The proper function of a computer is to act as a filer to suppress irrelevant data and highlight critical data, and

to allow managers and teachers to interact with models of the system (Ackoff, 1977). The most effective decision making involves gathering the minimum amount of data to provide maximum information to aid in a specific decision (Bork, 1979). One major impact of these technological developments on information handling is the shift of concern from volume of information available to the quality of information. According to Heterick (1981)

> Institutions are becoming noticeably more information intensive. Our role has always been to discover, develop and disseminate information, but our internal operations have never been so dependent upon effective information purveying as they are now, and increasingly will be. As the institution grows in size and complexity, as it continues to reach out geographically, as its involvement in sponsored research and public service reach higher levels of activity, the demand for prompt, pertinent, reliable information, and its cost effective dissemination through the administrative structure grows commensurately. (p. 29)

In several studies of universities (Plourde, 1981; St. John, 1980) the use of some type of management information system is reported in 90% of the institutions surveyed. According to research reported by Neiheisel (1981), "student and business applications are identified as the highest priority areas within each institution" (p. 21). These data indicate a great deal of consistency concerning the extent to which computer technology was used.

Computer applications in education have generally either streamlined some existing routine operation such as payroll or scheduling, or attempted some sophisticated modeling for the institution (Clemson, 1980). One major area of reported use of management information system in existing routine

operations is student records. Barnfather and Rosmanitz (1981) advocate use of management information systems for student development. Recent developments in the design of computer systems offer the possibility for applying computer technology in new ways to facilitate student development (Williams, Smith, & Esch, 1981).

Student Services

In the 1980s more information was collected about each student, and that information was more complex in nature. This was due to the introduction of computerized base management information systems. Because of the amount and complexity of student information, many colleges and universities began using computer-based record maintenance systems. A model of the ideal student records system was proposed by Patrick (1981), which included:

> integration of information at a common location but with information specific to each administrative office retained by that office,
>
> cumulative student records organized and stored by term,
>
> perpetual storage of records through the use of storage media,
>
> a flexible system which is able to adapt to changes in user requirements. (p. 67)

Section Conclusion

In higher education, an untapped potential exists for the innovative use of the microcomputer and minicomputer in both administration and classroom instruction. Administrators continue to expand in the area of administrative services

computerization. Since the basic capability of the microcomputer and minicomputer is processing information, they are used in various settings to perform an array of functions.

Administrators of higher education institutions need management information systems to effectively and efficiently cope with increasing tasks and responsibilities. The major benefits include better service, improved management, and more readily available and accurate information. Typically MIS systems are used in financial management and student records. The use of such systems continue to expand to specific areas not previously developed. Since the microcomputer has the capacity to provide improved information resources to various administrative service areas, administrators are beginning to realize the benefits of decentalized, distributed processing using these low-cost data processors (Sampson, 1978).

Medical Records

The use of medical records provide information and documentation of all of a client's encounters within a hospital or out-patient care facility. The personnel in these settings use data systems that collect, process, and deliver information in an effective and efficient manner (Abdelhak, 1982). The range of uses for computerized medical information extends through applications on medical decision making, administrative functioning, and out-patient clinical services (Murphy, Walters, & Blide, 1982). The medical record is the required source of information for utilization review.

discharge planning, and patient care evaluation studies (Watson, 1982). The demand, then, is for adequate, accurate, and accessible medical records that could be used for continuous patient care, as well as for medical and allied-health education and research.

Information systems experienced phenomenal growth in the late 1960s. This growth was in the area of finance as systems were needed to accommodate Medicare billing and reporting requirements (Newman, Kreitzer, & McCutcheon, 1982). During the mid-1970s, computer use proliferated. In 1975, the American Hospital Association's survey of 7,000 U.S. hospitals indicated that more than 80% of the hospitals were using some sort of information processing capabilities. By the late 70s, over 90% of the respondents reported use of some form of data processing for at least one application (Shafert & McDowell, 1978). Administrative services, primarily financial systems, were expanding in scope and capabilities concomitant with the development of on-line systems and medium-to-small sized computers replacing batch processing.

With the developments in computer technology, hospital administrators began to use the microcomputer and small-medium computers in areas outside traditional applications. Hospitals began exploring the potential of computer technology in clinical areas where stand-alone, on-site microcomputers were installed to handle specialized departmental data (Abdelhak, 1982). In terms of health care delivery, administrators identified rehabilitative services and home care for

persons suffering from chronic illness as areas needing data systems along with further development of computerized health information systems (West, 1980).

For linking acute and ambulatory phases of care, the medical record assumes a particularly important link so that continuity of care could be appropriately maintained. The issue for health care professionals, then, becomes how to plan for cost-effective acquisition and use of computer and communication technology to interface between different components of the health care system. The value of a comprehensive record system is also recognized in other phases of health care. Watson (1982) wrote that:

> the value of a comprehensive record system in community health centers is unquestionable, and the increasing importance of community health services in the future will also enhance the role of allied-health professionals in these facilities. (p. 31)

Section Conclusion

Medical records provide a management information system format in expanding areas of the health care profession, particularly the nonacute care facility. The area of particular interest is the use of data information systems in outpatient and community health services where allied-health professionals are employed. These phases of the health care system require further development of computerized health information systems. Such system development facilitated interfacing, reduces paperwork, and improves the quality of communication (Murphy et al., 1982).

Allied Health/Speech-Language Pathology

The term, allied health, encompasses a number of professions. For the purpose of this study, the professions include physical therapy, occupational therapy, and speech-language therapy. These professionals serve in out-patient clinics and various types of health systems. As such these professionals need computerized information systems for both program documentation, and to interface with various health systems.

In the development of a management information system for institutions of higher education's allied health disciplines, administrative, student clinical training, and client data are considered. These professional training programs have both an academic and clinical training component and documentation was needed for both areas. As a university training program, the staff maintains student records of clinical training for professional licensure requirements. The clinical training component serves individuals from the community so there is a need for accurate and reliable record keeping.

The clinical training component follows medical record keeping requirements for the client, and professional requirements for documentation of clinical experience records for the clinician. For the client, agencies and institutions providing services for the diagnosis and treatment of communication disorders, recognize the necessity of demonstrating accountability (Harden, Harden, & Norris, 1980). This

accountability attempts to document service quality, particularly through accurate record keeping of admission, therapy, and dismissal status. When the client receives diagnosis and/or treatment for a communication disorder in a health system facility, pertinent demographic as well as communication disorder information also needs to be accessible to various professionals in other facilities if that client is referred.

A computerized health information system is composed of a data base which includes demographic data, diagnostic protocol, therapy codes, and patient status (Kent & Chabon, 1980). Institutions (Mishra & Gannon, 1980) use a computer program to facilitate compliance with utilization review requirements, to provide information on the number of client intakes over a period of time, to retrieve portions of data from a master file, and to determine the distribution of professional staff time.

As a university training program, administrators need program documentation which includes such reports as academic supervision credit, faculty supervisory loads, and financial management data (Sears, 1983). These data provide the administrator, department head, or clinic coordinator with information pertaining to clinic management. Such documentation gives information "relative to their unique functions in an overall university organization" (Harden et al., 1977, p. 472).

The other requirement for this record keeping system is collecting, storing, and retrieving students' clinical records (Himelfarb & Dietrich, 1981). In addition to academic requirements, specific clinical hour accrual is needed for professional licensure by the American Speech, Language and Hearing Association. One source for obtaining this information is through documentation of specific clinical requirements and storage of these records through a data based system.

Section Conclusion

The management information system, using a stand-alone microcomputer, gives administrators and clinicians additional flexibility. This system enables administrators to collect, store, and retrieve client records in conformity to medical records protocol. For the clinician, the system provides a means to document various parameters of clinical training, including clinical clock hour for professional certification.

Chapter Summary

Administrators in higher education increasingly utilize the computer to cope with expanding tasks and responsibilities. University administrators employ some type of management information system, with applications primarily in student affairs and business. Previously, the management information system was available only to central administration. The microcomputer permits decentralization which improves management through more readily available and accurate information reporting.

The use of these systems continues to expand to areas not specifically developed. One such area is academic programs which have a clinical training component. The clinical training component typically serves individuals who have a disability so there is a need to manage records and financial data. As a university program which leads to professional certification, student clinical records need to be accurately collected and stored in a manner similar to their academic records. This dissertation project develops and implements a model management information system to accommodate both client and student records in a university allied health clinic.

CHAPTER III

DEVELOPMENT OF THE PROJECT

The methodology section of Chapter I outlined the problem, significance of the study, and the research methodology steps. Chapter II presented a review of the literature which provided the basis for the conceptual framework of the model process. The development and implementation of the model is the focus of this chapter, which corresponds to steps one through four of the research and development sequence. To complete the steps, the following sequence was followed:

1. Development of a model and flow chart
2. Description of the project's components
3. Implementation of the pilot project, evaluation and revision
4. Implementation of the project
5. Evaluation of the project by a review committee
6. Recommendation and summary.

General project methodologies were discussed in Chapter I. This chapter focuses on the strategies and results which correspond to steps one through five of the development sequence.

Step One: Model and Flow Chart Development

The model (see Figure 2) incorporates three components: students, administrators, and clinical administrators. The three components have input and specific output needs. The input needs are the specific types of data required to generate the output reports. The reports are specific for each component. For example, for administrators, the faculty/student ratio report provides information while students benefit from a permanent record of the clinical clock hours. The clinic administrator has responsibility for development of the system, and the accuracy of the data and reports. That individual also receives specific reports necessary for clinic administration.

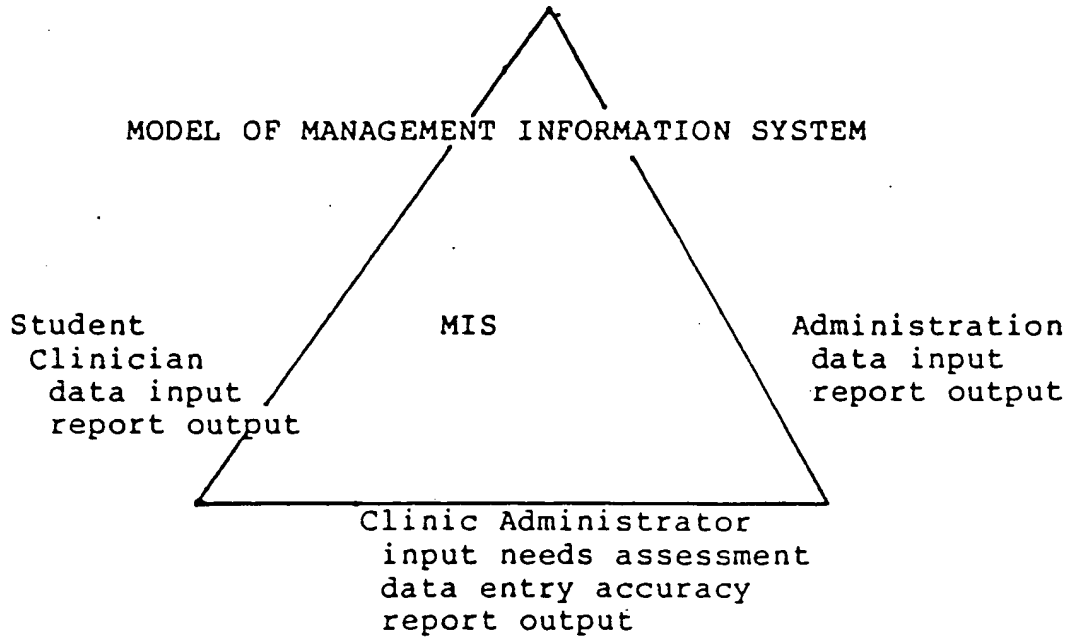


Figure 2. Model depicting the major users of the Management Information System and the function of each user.

The flow chart (see Figure 3) depicts the process for both diagnostic intake and therapy documentation. Each clinician is responsible for entering data onto the appropriate form, a graduate student checks the data for accuracy and enters it in the microcomputer management information system. The data, stored in the processing system, are checked for accuracy using the hard copy form as the reference. Once the data are checked for accuracy in the management information system program, any variable can be combined with any other variable or variables to generate a report document. A variety of reports are generated, since they are limited only by the type of entered data.

The following objectives are the primary focus in the development of the model and flow chart:

1. To develop a system which documented significant clinical transactions and generated reports to meet specific needs

2. To develop a system which could be used by students to accurately enter the data

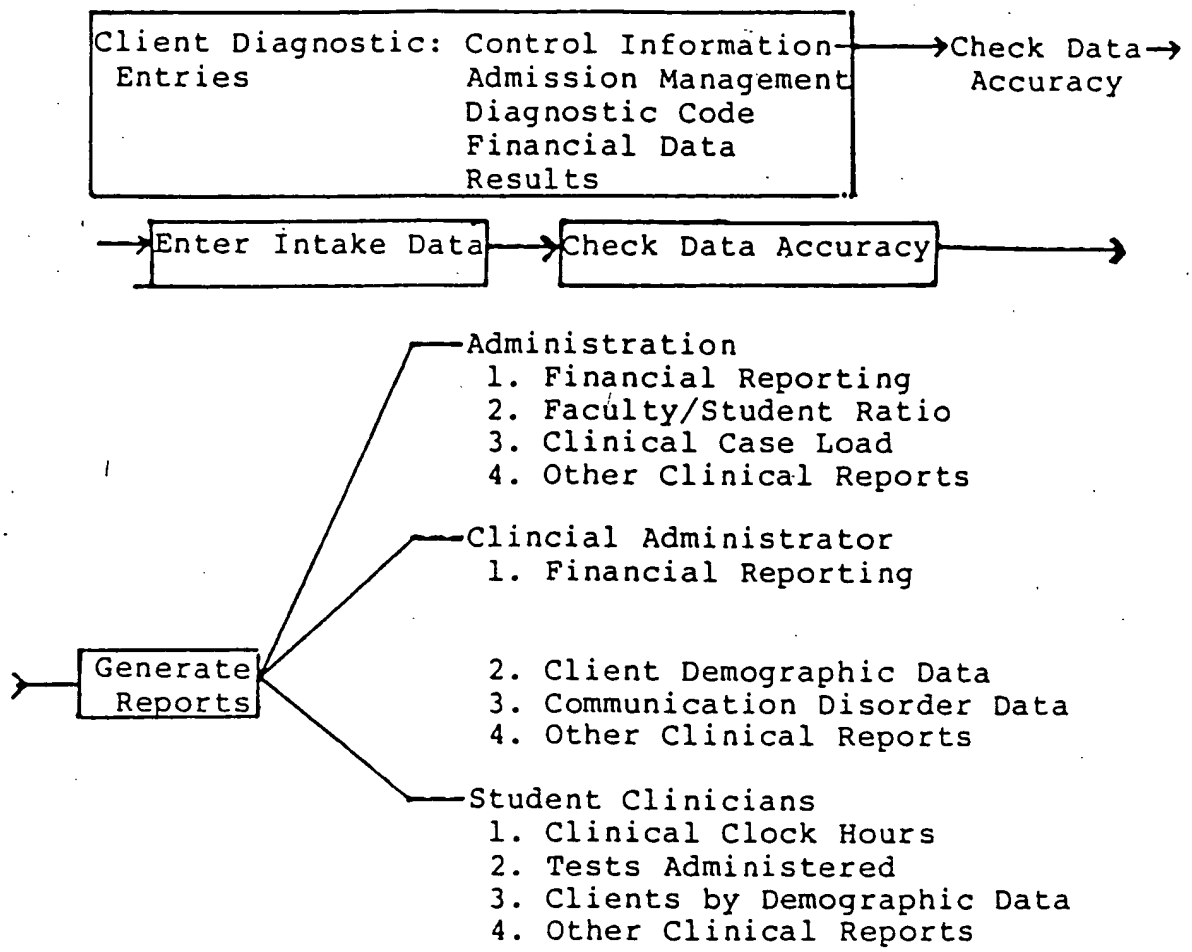
3. To establish a system that could store clinical records and be expanded when the management information system's capability was increased

4. To establish a system that could be used within the context of clinical record keeping protocol.

Step Two: Description of the Project's Components

The project utilizes an existing management information system (Cobb & Pitcock, 1982) that was developed by the

FLOW CHART OF CLINICAL MANAGEMENT INFORMATION SYSTEM: DIAGNOSTIC INTAKE



FlOW CHART OF CLINICAL MANAGEMENT INFORMATION SYSTEM: THERAPY

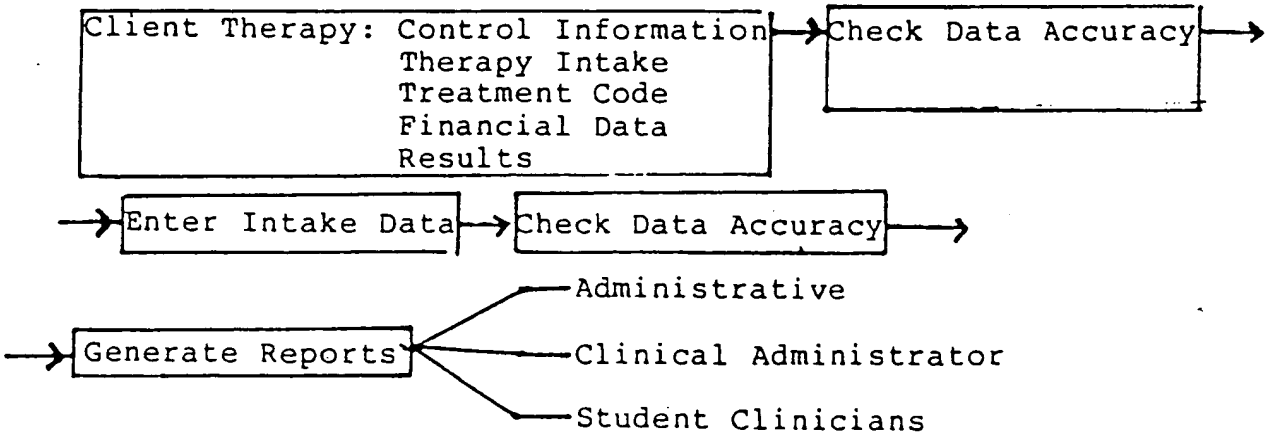


Figure 3. The Flow Chart depicted data input and reporting according to need for both diagnostic intake and therapy reporting.

professional development center (PDC) at Western Kentucky University. The system is designed for school administrators to collect, store, and retrieve pertinent records. This microcomputer system is modified for the doctoral project. The tasks of the project include modification of the management information system, designing the flow charts, developing the manual, forms, and procedures.

Description of the PDC Management Information System

The PDC system is a general purpose management system commercially available on an "as is" basis. The PDC system is based on aspects of several programs for minicomputers. The resulting system is versatile and meets a wide variety of management applications. The system incorporates standard features found in most microcomputer data base management systems as well as several unique features which include:

-word processing
-statistical analysis
-data file subsetting
-scratch pad data manipulation
-high speed record selection
-multi-criteria record selection
-alphanumeric data tabulation
-mailing label generation. (p. 1.1)

The management information system is designed to store and process information contained in a file. A collection of records, the basic unit of the database, are stored in the file. The records contain variables or data. Any variable can be combined with any other variable(s) to generate reports.

For this project, three files were created: diagnostic intake, therapy, and financial. The files contain all information germane to each area because, at this time, the files are not interactive. Another parameter of the system is the amount of data each file can contain. Since each file holds 170 alphanumeric characters, some items are numerically recorded. For those items, reports are generated in numerical code.

Description of Procedures

The procedures attempt to make the system "user friendly." The procedures are developed so that clinicians can enter the data accurately and in a short period of time at specific points in the clinical process (see Figure 4). Those points are during the diagnostic session, and initial and final therapy sessions.

Description of the Forms

The forms were developed using a medical records format. According to medical records terminology, the forms were called abstracts. The first abstract has four sections: control information, admission management, treatment, and results. The first two sections were completed when an individual was scheduled for a diagnostic session, the treatment section documented the therapy status, and the results section contained client status information from both the diagnostic and therapy sections.

PROCEDURES FLOW CHART

NUMERICAL SEQUENCE OF PROCEDURAL STEPS
FOR DIAGNOSTIC INTAKE AND THERAPY

DIAGNOSTIC

1. Orientation to the data based program in practicum meeting
THEN
2. All blank forms placed in the diagnostic folder by graduate assistants
THEN
3. Form Abstract completed by clinician using Abstract Manual
THEN
4. Form Abstract checked by Supervisor
THEN
5. Form Abstract given to graduate assistant for entry into microcomputer management information system.
THEN
6. Data entry checked with hard copy form for completeness and accuracy by Clinic Coordinator

THERAPY

1. Orientation to Management Information System
THEN
2. Blank forms placed into client files
THEN
3. Therapy Entry items completed in practicum meeting
THEN
4. Billing completed in practicum
THEN
5. Billing data checked for accuracy by graduate assistant
THEN
6. Billing data entered into microcomputer data system
THEN
7. Therapy Termination items completed at end of semester practicum meeting
THEN
8. Therapy Abstract checked for accuracy by graduate assistant
THEN
9. Therapy abstract data entered into microcomputer data system

Figure 4. A flow chart depicting the procedures for entering diagnostic and therapy data.

Description of the Manual

The manual is written to explain all the items of the abstract. The manual follows the medical records format for abstracts. The purpose of the abstract manual is to give users a clear explanation of each item so that the abstract forms could be accurately and completely filled out. The following represents the Format Abstract.

Abstract Item--specifies item using form number as locator

Recording Format--references how the item was printed on the abstract form

Description--describes the item

Data Use--specifies the application/s of the data item

Source Document--indicates the origin of the information and/or the reference lists

Rules/Procedures--outlines the specific policies for each item

Coding Examples--provides samples of the recorded items, particularly any non-standard entries.

Step Three: Pilot Project Implementation, Evaluation, and Revisions

The pilot project consisted of implementing the system which is developed from the model and flow chart. The pilot project involved five clinicians entering data for 15 clients. The objectives were:

1. To evaluate the model and flow chart's accuracy in depicting the use of the system

2. To evaluate the procedures, particularly the manual

3. To revise the management information system forms.

The pilot project objectives were developed to ensure completion of the process objectives. The pilot project's objectives were also important measures in the evaluation phase.

Pilot Implementation, Revision, and Evaluation

The procedures included an orientation session for the clinicians in the pilot project provided an overview of record keeping, the advantages/disadvantages of a microcomputer management system, and its importance to the clinician. Additional sessions were scheduled to jointly complete the data sheets using the manual. At the end of the last joint session, the clinicians evaluated the forms and the manual.

The clinicians used and evaluated the form (see Appendix A). In their evaluation they reported that the form contained all pertinent information but it was difficult to read and contained too much information. As a result, the form was revised, separating the information into two forms which differentiated diagnostic and therapy data reporting. The therapy form was further divided into beginning therapy entries and end of semester entries. Those forms were then used in the project implementation.

As a result of these meetings, the manual was also revised and the codes for diagnosis, therapy, occupation, and recall/deferred admission were changed. The client identification number was also dropped from the system. The clinicians found that the manual was readable and self-explanatory. This concluded the pilot project.

As a result of the evaluation, the following statements summarize the comments:

Strengths.

1. The procedures and forms required the same information for each individual.

2. The data were stored on a permanent system.

3. Data could be used to generate various reports.

4. The forms provided for both hard copy and microcomputer storage of records.

5. Student records could be maintained in permanent storage.

6. The information could be updated on a continuous basis, which kept client and clinician records current.

Concerns.

1. The procedures and manual needed revision to reflect the evaluation by the clinicians participating in the pilot project.

2. Existing files as well as past files needed to be entered into the system.

3. The form did not include information needed for complete data entry.

4. The system could not generate desired reports, specifically in fiscal and cumulative student clinical clock hour reporting.

As a result of the evaluation, the concerns were addressed. The only files used for this project were current files and the types of reports were specified. The other

concerns were addressed through modifying the system. The project was implemented once the parameters of the system were defined for the dissertation.

Step Four: Project Implementation

After the concerns were addressed, the project began. A graduate student was trained in the entry of the data for the clients enrolled at Western Kentucky University's Communication Disorders Clinic, 1983 Summer program. The clinic enrolled 40 clients and 15 graduate/undergraduate clinicians scheduled a practicum for academic credit. The clinicians received an orientation and training in the data management system, with particular emphasis on data entry for both diagnostic and therapy entries. Appropriate reports were then generated from the entered data.

Revised Reporting Format

The reporting format is divided into two sections, intake and therapy. The intake items reflect control identification and admission management information. The therapy sections are based on treatment and results.

Intake items. These items were developed from medical records protocol. The intake items include:

client name

social security or other identifying number

residence

phone number

date of birth

sex

race

and occupational status.

The social security or other identifying number is used for billing third party payors such as Medicare, Medicaid, or Supplemental Security Income. The residence specifies the mailing/billing address of the client or family. The phone data item lists both home and work numbers as well as a code if the number is a neighbor's listing. The date of birth listing is in a year, month, day sequence so the system can scan records by year. The sex and race items are demographic variables and appropriate codes are listed in the abstract. The occupational status code is based on the Standard Occupational Classification Manual.

Standard Occupational Classification Manual (1980)

The appropriate codes are entered on the Intake Form (see Appendix B). The students refer to the Intake Abstracts Manual (see Appendix C) for instructions on how to enter the data for each client. Either I or a graduate student was available to answer any questions concerning the entry of data.

Admission management. This section pertains directly to the documentation of speech pathology services. The items include:

diagnostic admission date

source of referral

site of treatment

expected source of payment

diagnostic fee status

clinicians' identification number

supervisor's identification number

consultation

organic origin diagnosis

service

diagnostic test administered/

communication disorder code

length of diagnosis

recommendation

and recall/deferred admission date.

The diagnostic admission date is entered as year, month, day to facilitate system record scanning. The source of referral identifies the manner in which the client is referred to the clinic; this file is continually updated to incorporate additional professionals and agencies. The treatment facility specifies the place where the client is seen for an evaluation; this item could be used to centralize files. The payment source and diagnostic fee status is used to indicate how the evaluation fee would be paid; and in the case of self-payment, whether or not the fee would be waived.

The clinician numbers identify the students assigned to the evaluation; this item documents all clinician transactions. The supervisor number identifies the faculty member responsible for the evaluation. The consultation item specifies the agencies or professionals the client is referred for further testing and/or additional services; this list is

continually updated. The organic origin diagnosis is based on the International Classification of Diseases, 9th Revision, Clinical Modification volume 1; this item permits exchange of data between other health systems.

The service code reflects six specific areas the American Speech Language Association required for clinical certification of students. The diagnostic test codes are used to list all available evaluation instruments, and to document the type and frequency of use by clinicians. The communication disorder code is a compilation of suggested coding systems from the professional organization, other professional literature (Nelson, 1983) and personal clinical experience. Diagnostic time documents the length of the evaluation; this item is used primarily for hour allocation of clinical clock hour accrual. The recommendation documents the outcome of the evaluation, while the recall/deferred admission date indicates later admission of an individual to therapy.

Therapy form. Once the client is evaluated, all further clinical transactions are entered on this form (see Appendix D). The information pertains to all therapy transactions at the beginning and end of the semester. The items include:

Beginning Therapy Entries

client name

date

clinician identification numbers

supervisor number

tests administered

service

treatment code

site of treatment

End of Semester Therapy Entries

date

tests administered

attendance/cancellation code

treatment status

recall/termination date

The beginning of the semester entries document initial transactions. The client name is the link between the diagnostic form and this one. The date is entered in the year, month, day format and serves to recall data for various reports. The clinician number documents the number of clinical hours accrued while providing therapy to a client. The supervisor number is included for report generation of multiple aspects of clinical services. The test administered section documents pre-therapy assessment. The service item categorizes the therapy into the professional organization's classification for clinical clock hours. The treatment code is an attempt to specify the type of therapy which is based on several systems.

The end of semester entries conclude all clinical transactions between a clinician and the client. The date remained on a year, month, day format, and is used for data control and report generation. The tests administered section documents any assessment used for post-therapy evaluation. Treatment status provides information on termination,

or a listing of clients who want to be enrolled next semester. The data of recall/termination specifies either when the ceased to attend the clinic or when the client should be called for readmission. The readmission lists is used for rescheduling clients at the beginning of each semester.

Entry process. These items are contained in the diagnostic abstract. The student clinicians assigned to the evaluation complete the form which is checked by the supervisor. The diagnostic form is completed during the evaluation session. The therapy form is divided into two sections. There are eight items to complete at the beginning and five items at the termination of therapy. Form completion of the diagnostic form takes approximately 20 minutes; for therapy forms, approximately 10 minutes at the beginning and end of the semester.

The information from the hard copy is then entered into the microcomputer management information system. The diagnostic information is entered on a once a week schedule. The beginning therapy entries are entered within a week of form completion and the end of semester data is entered during the final week of the term. The data are checked for accuracy by the clinic director.

Section Conclusion

This section specifies the type of information, its source, and purpose. Information is entered for both diagnostic and therapy transactions. Appropriate reports are generated based on the data entered from those transactions.

Step Five: Establishment of the Review Committee

The review committee was composed of four individuals representing areas either directly benefitting from or contributing to the design of the system. The panel of experts/consumers included: a nonfaculty medical records director, an administrator, a faculty speech language pathologist who was a program director, and a graduate student. The committee provided input into the development of the model and flow chart; and evaluated all forms, manuals, and report formats. The members were responsible for evaluating the final project draft of the processes, procedures, and reports. A written report summarized their evaluation.

For the final project draft review, the committee used an evaluation instrument which measured system applicability for administrators, student clinicians, as well as significant parameters such as manual readability and data accuracy. The evaluation instrument was designed using a 5-point Likert-type scale, with the scale ranging from very satisfied (1) to very dissatisfied (5). The criteria for judging the project included:

1. Degree of appropriateness of the model and flow chart
2. Degree of inclusion of the five components of an information system which included input device, storage, control unit, processing unit, and output device
3. Degree of interface with other health systems
4. Degree of documentation of student records

5. Degree of potential use by departmental administrators

6. Degree of potential use by clinical administrators

7. Degree the system was "user friendly"

8. Degree of form and manual readability.

Step Six: Recommendation and Summary

The last step of the research and development of this project is the evaluation of the system's operational use. the final chapter, Chapter IV, covers the operational use, particularly the reports, the committee's evaluation of the project, and recommendations for further development.

Chapter Summary

This chapter presented the development and implementation of the research project. The model and flow chart, the pilot project, the project's implementation, and the review committee's purpose was delineated. The major task in the project's development was the writing and revision of the abstract manual for the 21 diagnostic and 14 therapy items. Once the project was developed and implemented, the committee evaluated the management information system and recommendations were made. The committee evaluation and recommendations were addressed in Chapter IV.

CHAPTER IV

PROJECT IMPLEMENTATION, COMMITTEE REPORT, SUMMARY, AND RECOMMENDATIONS

The final steps of a research and development approach to the project includes the revision of the procedures and putting them into operational use. Chapter IV deals with the project implementation, reports generated from the data, and the committee evaluation of the project. The evaluation includes the model, flow chart, manual, and reports. The chapter concludes with the summary and recommendations.

Summary of Project Revision

The abstract manual and forms were modified based on the evaluation of the pilot project and the constraints of the management information system. The modifications of the forms and manual consisted of restructuring the diagnostic and therapy forms for improved readability and usage based on time of transactions. The diagnostic intake form was completed when the evaluation was completed, the therapy form was completed at the beginning and end of the semester or when the client terminated from therapy. The abstract manual was modified to reflect these changes.

The changes were also made in the recording format due to the constraints of the data base management information

system. The system had a capacity of 170 characters per file, which meant that each file was restricted to that amount of information. This meant that files for diagnostic intake, therapy, and financial recording were separate. This limitation also necessitated the use of numeric coding systems for items such as student identification, tests, occupation, treatment sites, and referral source.

Modifications were also made to the financial file since the file was based on mathematical computations for the monthly billing, balance, payment made, and balance to date. In order to improve computation accuracy, the financial file instructions were formatted to perform calculations by typing in the variable name instead of entering the formula.

The files were created for those three programs and the display screen was changed to accommodate all file information on the screen and on a one-page print out for each file. The records were entered using data from the hard copy forms. When all the information from the forms was entered, a back-up floppy disk stored all the data. This procedure protected the data so that the records would not be destroyed or damaged when the data files were used.

Reporting Format and Reports

Once the data are entered into the microcomputer management information system, reports, utilizing the data contained in a file, are generated. The reports for the diagnostic intake consist of data existing in the file. The reports reflected information from the diagnostic file, the therapy

file, and the financial file. The types of diagnostic reports (see Figure 5) generated for this dissertation are representative of those available from the file data.

Report #1
Status of Clients After Diagnosis
Date Client Name Address Status Recall Date

Report #2
Communication Disorder by Type
Date Client Name Clinician Communication Disorder

Report #3
Clinical Experience
Date Client Name Clinician Communication Disorder

Report #4
Supervisor Assignments
Date Client Name Clinician Communication Disorder

Report #5
Client Billing
Date Client Name Mailing Address Diagnostic Fee

Report #6
Financial Status
Date Client Name Session Charge Payment Made Balance

Figure 5. Types of Diagnostic Reports Available. These diagnostic reports reflect the type available from the entered data in the Diagnostic Intake file.

Once the data for therapy are entered into the management information system, appropriate reports are generated. Again, the reports (see Figure 6) are limited to the variables entered into the files. The reports generated for the dissertation (see Appendix E) are representative of those available from the data.

Similarly, financial reports (see Figure 7) are also generated. These reflect the income from therapy, the payments, and the balance. A monthly statement is sent to the

family, client, spouse, or third party payor. When payment is made, the amount is entered into the client's record. At the next monthly billing cycle, the current session charge is tabulated as well as the payment balance.

Report #1
Clinical Clock Hours
Client Name
Clinician #
Supervisor #
Date
Language Articulation Voice Fluency
Aural Rehabilitation Hearing Assessment

Report #2
Clinician Administered Tests
Date
Clinician #
Supervisor #
Beginning of therapy: Test 1 Test 2 Test 3 Test 4
End of therapy: Test A Test B Test C Test D

Report #3
Supervision: Therapy Responsibility
Client Name
Clinician #
Supervisor #
Date

Figure 6. Types of Therapy Reports Available. These reports were generated from the data available from the Therapy File which stores reports for each client.

A monthly and/or end of semester fiscal report is prepared for the clinic administrator and the department head. The graduate assistant and clinic coordinator are responsible for entering and checking all financial statements and transactions. The dissertation reports (see Appendix F) reflect the type available from the data.

Report #1
Billing Statement
Date Client Name Address Phone

1 hr sessions
1/2 hr sessions
Rate per 1/2 hr sessions
Session charge
Payment
Date of payment
Payment balance
Balance to date

Financial Report

Frequency Statistics for Current Balance and Balance to Date

Balance to Date
Frequency
Percentage
Record Total
Sum
Current Balance Mean
Bar Graph

Figure 7. Financial Statements for the Communication Disorders Clinic. Financial data on each client was stored in the Billing Statement File. Data from the file were also used to generate monthly and/or end of semester fiscal reports.

Committee Evaluation and Report

The committee met to evaluate the project when steps one through five were completed. The committee evaluated the model, flow chart, forms, manual, and reports. For the evaluation, a packet containing all pertinent information was given to each member. The committee used the evaluation form discussed in Chapter III. The committee convened their evalution session with only the members present; I was available upon request to clarify and answer questions. At the end of their evaluation, they returned the completed forms

and submitted a written evaluation. An item analysis and written evaluation (see Appendix G) indicated that the committee was very satisfied-satisfied with the project. Stan Cooke wrote the evaluation which was signed by all members. The evaluation stated:

> It is the consensus of the committee that the system is overall-extremely efficient and adequate. The rating of all areas is very satisfactory, with the exception of the portion dealing with diagnostic and therapy coding. Some in-service training for system utilizers would clarify any confusion or misunderstanding of the codes.
>
> One strong point of the system is the use of the International Classification of Disease in terms of interface with other medical records systems and needs to be maintained. The abstract manual is outstanding in information for both diagnostic and therapy intake. This is, in fact, a superior portion of the project and makes for a very readable program. The flow chart depicts the sequence of significant events. Likewise, the model is appropriate, but might be improved to schematically to enhance readability (note attached ratings).
>
> In summary, the system meets all the primary objectives for administration and students, and at the same time remains flexible enough for growth and expansion.

The committee reported that the model and flow chart adequately depicted the users and flow of information in the management information system. The model displayed the system users, administrators, clinic administrators, and students, as well as input, output, and accuracy verification. The flow chart plotted the components of both diagnostic intake and therapy, where the collection of data on a hard paper copy was transferred to the intake or therapy data file. The information was checked for accuracy and completeness at this point. Once the data were entered into the microcomputer's management information system, the data were used to generate various reports.

The manual, abstracts, and reports were also evaluated. The committee reported that the manual was well-written and followed medical records protocol, and was "user friendly." The abstracts were also judged favorably. The reports met administrative, student clinical clock reporting needs, and client reporting data.

Recommendations

Based on the committee recommendations and the evaluation of the project, the following recommendations were made:

1. Whenever the management information system was updated, certain features should be incorporated into the system. Specifically, the updates should include: interaction between files, the expanded word processing capacity so that written reports could be stored, and expansion of files to contain more data so items could be entered using the alpha system instead of a numeric code.

2. Specific abstract items needed updating and should be scheduled at specific intervals. Those items included: treatment site, occupational code, diagnostic and therapy code, clinician numbers, and supervisor number.

3. The password for the files should be invisible on the screen.

4. The training procedures satisfactorily trained the clinicians and the graduate assistant to accurately use the system. These procedures, however, should be evaluated and refined when necessary.

5. An attempt should be made to use the system in a satellite treatment facility.

Limitations of the Study

This doctoral project applied a "state of the art" microcomputer management information system to a higher education training program in an allied health discipline. This study was limited to one allied health field, speech-language pathology, to demonstrate the feasibility of a stand-alone management system for clinical management and student clinical clock hour storage. As mentioned in this chapter, the process needs continual updating to meet changing demands. Additionally, further development of the system depends on the expansion of the management system.

This system could be used by any university or college training program in speech-language pathology. With modification or elimination of the diagnostic and treatment codes, the system could be used by any allied health clinical training program having a microcomputer. The management information system is available for the Radio Shack TRS-80; the system is being adapted for other microcomputers as well.

Chapter Summary

This doctoral project demonstrated the use of a stand-alone microcomputer management information system in a university speech-language pathology training program. The purpose of this project was to improve clinical management capabilities and store clinician clock hour records. The

project designed a "user friendly" process for the accurate entry of data. The management information system entered, stored, processed, and retrieved client records; the report data were then formatted for various reports. The reports were designed for three groups: department heads, clinic administrators, and students.

This system was designed to be used by any university allied health training program with certain modifications. In this age of information technology, the implementation of such a data-based system increases the applied knowledge in this field.

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APPENDIX A

INITIAL ABSTRACT FORM

1. Client Unit Number a b c

2. Client Name

3. S.S. Number (optional)

4. Residence a b
c d
e
Phone f

5. Date of Birth Mo. Day Yr.

6. Sex

7. Race (Optional)

8. Occupational Status a b c

9.

10. Diagnostic Admission Date

11. Source of Referral

12. Site of Treatment

13. Expected Source of Payment

14. Consultation

15. Service
00 Language
50 Misarticulation
60 Aural Rehabilitation
70 Voice
80 Dysfluency
99 Multiple

Treatment

16. Communication Problem

17. Organic Origin Diagnosis

18. Diagnostic Tests

19. Provider Dx Cl. Sup.
Rx

20. Date of Rx Assessment/Rx Mo. Day Yr.

21. Treatment Code

Results

22. Total Diagnostic Sessions in Minutes

23. Number Therapy Units Scheduled a b

24. Cancellations by Reason

25. Current Treatment Status

26. Date of Deferred Admission/ Termination/Recall Mo. Day Yr.

ADMISSION CRITERIA _____
DIAGNOSTIC CRITERIA _____
THERAPY CRITERIA _____
DISCHARGE PLANNING CRITERIA _____

APPENDIX B

REVISED DIAGNOSTIC ABSTRACT FORM

COMMUNICATION DISORDERS CLINIC DATA FILE

1. CLIENT NAME: Last First Middle
2. ADMISSION DATE: yr. mo. dy.
3. SOCIAL SECURITY NUMBER/ID NUMBER:
4. SEX:
5. RACE:
6. PHONE: Home Work
7. BIRTHDATE: yr. mo. dy.
8. OCCUPATIONAL CODE:
   FATHER: MOTHER: CLIENT:
9. REFERRAL SOURCE:
10. TREATMENT FACILITY:
11. PAYMENT SOURCE:
12. DX FEE STATUS:
13. CLINICIAN #:
14. SUPERVISOR #:
15. CONSULTATION:
16. ORGANIC ORIGIN DX:
17. SERVICE: Language Articulation Aural Reh. Voice Fluency Hear. As.
18. DX TESTS:
19. COMMUNICATION DISORDER CODE
20. LENGTH OF DX
21. RECOMMENDATION
22. RECALL/DEFERRED ADMISSION DATE: yr. mo. dy.

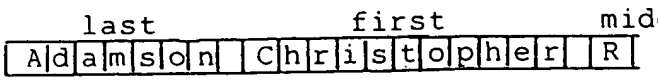
APPENDIX C

MANUAL

DIAGNOSTIC INTAKE SECTION

ABSTRACT ITEM: 1. CLIENT'S NAME

RECORDING FORMAT:



DESCRIPTION:

The client's name is a required item. The name is recorded as last, first, middle initial. The correct spelling is vital; no nicknames should be used.

DATA USES:

The individual's name is used as a control variable for retrieving all client information. This item is used for financial and data collection.

SOURCES OF INFORMATION:

Primary Source Document--Client, Client Information Record, or other clinical reports.

RULES/PROCEDURES:

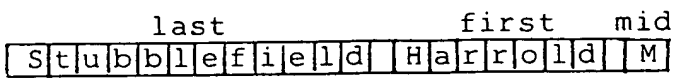
1. Record the name in correct order. Be sure the spelling is accurate and that no nicknames are used.

2. Enter the client's name in all capital letters, with one letter to a box. Leave a space between the client's last, first, and middle name.

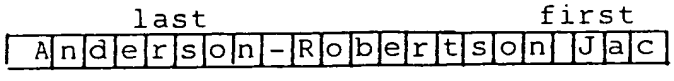
3. If the name does not fill all the blocks, leave the unnecessary blocks empty.

4. If the name has more letters than blocks available, enter as much of the name as possible, still using one letter to a box and leaving a blank box between the last and first name.

CODING EXAMPLES:



This person's name is Harrold M. Stubblefield.



This person's name is Jacquelynne.

ABSTRACT ITEM: 2. DIAGNOSTIC ADMISSION DATE

RECORDING FORMAT:

7	9	0	7	1	7

This person was admitted for an evaluation on July 17, 1979.

DESCRIPTION:

This data item specifies the date the person was seen for the initial diagnostic evaluation.

DATA USE:

This data item provides clinic utilization information on diagnostic scheduling by month, semester, and year.

SOURCE OF INFORMATION:

Primary Source Document-Client Information Record, Diagnostic Report

RULES/PROCEDURES:

1. Be certain to follow the format of year, month, day.

2. Record the date numerically.

3. Be certain to enter the date of the initial diagnostic evaluation.

DEFINITIONS:

CODING EXAMPLES:

8	0	0	5	0	5

The initial evaluation was May 5, 1980.

ABSTRACT ITEM: 3. SOCIAL SECURITY/IDENTIFICATION NUMBER

RECORDING FORMAT:

The client's social security number is

DESCRIPTION:

If an individual has a Social Security Number, record it. The item is optional as many children do not have a Social Security Number. If a client's clinic fees are being paid by a third party, a number must be used.

DATA USES:

This number permits more rapid retrieval of pertinent information and billing for an individual enrolled in State, Federal, or insurance reimbursement programs.

SOURCE OF INFORMATION:

Primary Source Document--General Information Form
Secondary Source Document--Patient

RULES/PROCEDURES:

1. If a child receives benefits, the child's Social Security Number will have an extra digit which must be recorded.

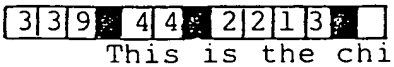
2. In the event an individual is eligible for third party reimbursement but does not have a Social Security Number, that individual must be referred to the Social Security Administration.

3. Watch for transpositions of numbers when recording the Social Security Number.

4. If a client is private pay, the Social Security Number is optional.

CODING EXAMPLES:

This is the client's Social Security number.



This is the child's Medical Card Number.

ABSTRACT ITEM: 4. SEX

RECORDING FORMAT:

[M]
This person is a Male.

DESCRIPTION:
This data item specifies the person's sex.

DATA USES:
For research and federal statutes, information is often required as to prevalence of communication disorders as grouped by sex.

SOURCE OF INFORMATION
Primary Source Document--Client Information Record, Diagnostic Report.

RULES/PROCEDURES
Be certain this item is completed.

EXAMPLES

[F]
This individual is a Female.

ABSTRACT ITEM: 5. RACE

RECORDING FORMAT:

[C]
This individual is Caucasian.

DESCRIPTION:
This data item records the race of the client as specified by Federal Law.

DATA USE:
This data item documents the use of this facility by all members of the community. This information is required to document compliance with Federal Law.

SOURCE OF INFORMATION:
Primary Source Document--Client Information Record, Case History

RULES/PROCEDURES:
1. Be certain to complete this item.

DEFINITIONS:
C Caucasian
B Black American
H Hispanic American
I International Student
O Other

CODING EXAMPLES:

[B]
This person's race is identified as Black American.

[H]
This person's race is identified as Hispanic American.

[I]
This person is a non-native American and either the individual or a family member is attending the University as a student.

ABSTRACT ITEM: 6. PHONE

RECORDING FORMAT

HOME WORK

This person's home phone number is 782-0000 and the work number is 745-1111.

DESCRIPTION

This data item gives the client's home and work phone number and the number of someone where they can be reached.

DATA USES

This data item provides the clinic staff with a stored phone number so that there is a permanent record.

SOURCE OF INFORMATION

Primary Source Document--Client Information Record or Diagnostic Report

RULES/PROCEDURES

1. Be certain to obtain both the work and business phone number.

2. Be certain to record the Area Code for all clients.

3. If there is no phone available, write NP in the Area Code section.

4. If the phone number is a neighbor's or relative's number, enter 0 in the section for Work or Home.

5. Be certain to accurately record the information.

DEFINITIONS

The codes are as follows:

Home as H Work as W
Another person's phone number as 0
No phone as NP

CODING EXAMPLES

1. Home 502-782-3434 Work 502-842-2222

Home 502-345-0000 Work 0

This number is not the client's number but the individual can contact the client.

Home NP Work

This individual has no phone.

ABSTRACT ITEM: 7. DATE OF BIRTH

RECORDING FORMAT:

5 2 1 2 2 4
This person was born December 24, 1952.

DESCRIPTION:

This data item specifies the client's date of birth.

DATA USES:

This data item is used in utilization assessments to group the people using the clinic by age groups.

SOURCE OF INFORMATION:

Primary Source Document--Client Information Record, Diagnostic Report.

RULES/PROCEDURE:

1. Record data of birth in year, month, day format.

2. Be certain to record date of birth accurately.

DEFINITIONS:

CODING EXAMPLES

1. 8 1 0 4 0 5
This individual was born March 5, 1981.

ABSTRACT ITEM: 8. OCCUPATIONAL STATUS

RECORDING FORMAT:

5	5	0	0		9	9	9	8				

The husband is a farmer, the wife is a homemaker, and the child is being seen for therapy.

DESCRIPTION:

This item identifies the occupation of the heads of households by occupation classification of the U.S. Department of Commerce, 1980 census data.

DATA USES:

This data item is helpful in determining the occupation of people utilizing the clinic's services. For adults with a communication disorder, occupational information is useful for longitudinal studies on incidence and related factors. Occupational information can also be compared to the fees selected from the sliding scale.

SOURCE OF INFORMATION:

Primary Source Document--Client Information Record, Case History

RULES/PROCEDURES:

1. Be certain to record occupation of husband, wife, or guardian.

2. When recording occupational status, watch for transposition or mismatching of occupational number or code.

3. In CLIENT OCC CODE, enter the appropriate Code for the Client.

4. If the client is a child, enter the appropriate code for the parents and leave the CLIENT OCC CODE blank.

DEFINITIONS:

Identifying items for the CLIENT OCCUPATIONAL CODE:

If the client is a child, leave this space blank.
If the client is a student, enter the appropriate code.
If the client is an adult, use the appropriate code in the CLIENT OCC CODE.

CODING EXAMPLES

[1][4][1][2] [4][3][6][2] [ ][ ][ ][ ]

The husband is an accountant and the wife is a sales clerk. Their child is enrolled in the clinic.

[5][1][3][0] [ ][ ][ ][ ] [5][2][3][2]

The husband is a policeman and the wife is a dental assistant and she is enrolled in the clinic.

[ ][ ][ ][ ] [ ][ ][ ][ ] [9][9][9][9]

This client is a student at Western Kentucky University.

ABSTRACT ITEM: 9. REFERRAL SOURCE

RECORDING FORMAT:

[0|0|0|5] The client was referred by Dr. ABC.

DESCRIPTION:

This data item records the agency or professional referring the client to the Communication Disorders Clinic.

DATA USE:

The accumulated records reflect the manner in which clients are referred to the clinic. For effective community utilization, it is important to know the professionals and agencies utilizing the clinic's services. The Source of Referral information is also used to correlate demographic and payment source with the origin of referral.

SOURCE OF INFORMATION:

Primary Source Document--Case History
Secondary Source Document--Referral Source History

RULES/PROCEDURES:

1. Consult the Referral Source History for correct code numbers.

2. All referring professionals and agencies are listed under appropriate categories. If a referral source is unlisted, contact the Clinic Coordinator so a number can be assigned.

CODING EXAMPLES:

[0|0|0|7] The client was referred by Dr. DEF, a family practitioner from Madisonville, Ky.

[3|0|0|5] The client was referred by Ms. GHI, a School Speech-Language Clinician.

ABSTRACT ITEM: 10. TREATMENT FACILITY

RECORDING FORMAT:

[0|1]

This person is receiving services at the WKU Communication Disorders Clinic.

DESCRIPTION:

This data item identifies the site where services are provided.

DATA USES:

The accumulated records reflect the number of clients served at all clinical sites. This item documents the type of clinician practicum experience based on site placement and the number of sites utilized during a specific time period.

SOURCE OF INFORMATION:

Primary Source Document--Case History
Secondary Source Document--Site of Treatment Reference List

RULES/PROCEDURES:

1. Enter the appropriate two-digit code from the Site of Treatment Reference List, included in this abstract.

2. If a treatment site is not listed, consult the Clinic Coordinator so a number can be assigned.

DEFINITIONS: SITE OF TREATMENT REFERENCE LIST:

01 WKU Communication Disorders Clinic
02 Head Start
03 W124
04 X232
05 A34C
06 A50D
07 B78C
08 CDC
09 ABC
10 DEL

CODING EXAMPLES:

[0|7]

The side of treatment is the B78C program.

ABSTRACT ITEM: 11. EXPECTED SOURCE OF PAYMENT

RECORDING FORMAT:

[S][P]
This client is paying the fee for services.

DESCRIPTION:
All fee for services are sent to the individual or agency entered in this item.

DATA USES:
This data item is an important link between other data items and clinic financial data. The Source of Payment defines the relationship of individuals and institutions to the sources of financing rehabilitative services.

SOURCE OF INFORMATION:
Primary Source Document--Diagnostic Abstract
Secondary Source Document--DEFINITIONS: EXPECTED SOURCE OF PAYMENT

RULES/PROCEDURES:
1. Be certain to record payment source on the Diagnostic Abstract.

2. If a payment source is not identified, consult the Clinic Coordinator so that the source can be coded.

DEFINITIONS: EXPECTED SOURCE OF PAYMENT:
SP Self-Payment
MR Medicare
MD Medicaid
VR Vocational Rehabilitation
CH Champus
VA Veterans' Administration
GR Grant
ST Student Enrolled in Ex Ed 090
SN Student Not Enrolled on Ex Ed 090

CODING EXAMPLES:

[V][A]
The expected source of payment is the Veterans' Administration.

[S][N]
This student is receiving clinic services but is not enrolled in Ex Ed 090.

ABSTRACT ITEM: 12. DIAGNOSTIC FEE STATUS

RECORDING FORMAT:

[Y]

The client will be billed $25.00 for the evaluation

DESCRIPTION:

This data item indicates whether an individual receiving an evaluation is paying either through self-pay, a third party, or is not being charged.

DATA USES:

This data item is used for billing, and financial analysis. The number of individuals paying or not paying the diagnostic fee is also reported.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Abstract

RULES/PROCEDURES:

1. Be certain to enter the correct code indicating payment or nonpayment of this fee.

2. Enter the code in capital letters.

DEFINITIONS:

Payment of diagnostic fee as Y
Nonpayment of diagnostic fee as N
Special fee less than the $25.00 fee as S

CODING EXAMPLES:

[N]

This individual is not paying for the evaluation.

ABSTRACT ITEM: 13. CLINICIAN NUMBER

RECORDING FORMAT:

0	0	4	1

The clinician is Susie Smart, Clinician Number 0041.

DESCRIPTION

This data item identifies the clinician/s assigned to the evaluation team.

DATA USES

The accumulated data of diagnostic assignments and therapy provides the clinician with a record of clinical experience separated into the ASHA clinical practicum categories. The resulting printout is the permanent record of accumulated clinical experience.

SOURCE OF INFORMATION

Primary Source Document--Student Clinician Roster

RULES/PROCEDURES

1. A clinician must use the Clinician Number as this documents the clinician's clock hours accrued during a semester and throughout the clinical program.

2. If two clinicians are assigned to the evaluation, enter both Clinician Numbers.

CODING EXAMPLES

0	0	3	2

0	0	2	1

The student clinicians who delivered services were Ms. LMN 0032, and Mr. OPQ, 0021.

ABSTRACT ITEM: 14. SUPERVISOR'S NUMBER

RECORDING FORMAT:

[0|1] The supervisor for the evaluation was Dr. BCD.

DESCRIPTION:

This data item identifies the supervisor responsible for the evaluation.

DATA USES:

This data item serves as documentation for supervisory duties and ASHA requirements. This item documents faculty contact with clinicians and the data is used for various administrative reports. Unless a supervisor identification number is entered, credit cannot be given for supervision time nor can accurate time-in-motion information be collected.

SOURCE OF INFORMATION:

Primary Source Document--Supervisor Roster

RULES/PROCEDURES:

1. Check the Supervisor Roster and enter the correct code number.

CODING EXAMPLES:

[1|0] The Supervisor assigned to the evaluation is Dr. OIA.

SUPERVISOR CODE NUMBERS

01 Dr. BCD, CCC/SP

02 Mr. EFG, CCC/SP

03 Mrs. HIJ, CCC/SP

04 Mrs. KLM

05 Ms. NOP, CCC/SP

06 Dr. QRS, CCC/SP

07 Dr. TUV, CCC/SP

ABSTRACT ITEM: 15. CONSULTATION WITH OTHER AGENCIES

RECORDING FORMAT:

0	0	0	5		4	0	0	2

This person was referred to Dr. EFI, pediatrician, and to the Audiologist at B78C.

DESCRIPTION:

This data item records all referrals made to other professionals and agencies. A release form must be signed by the client, family, or guardian before a report can be seen.

DATA USES:

The accumulated records of referrals reflect the type and volume of referrals made by the Communication Disorders Clinic staff. This measure is seen as a supplementary measurement of clinic activity.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Report
Secondary Source Document--Attached Referral Source Listing

RULES/PROCEDURES:

1. Record in consecutive boxes.

2. As many as four referrals can be recorded in the allocated spaces. If there are more than 4 referrals, enter three referrals in the first 3 spaces; and in the 4th space, enter the balance of the referrals. To identify those referrals, consult the diagnostic report.

DEFINITIONS:

Consult the attached Source of Referral List

CODING EXAMPLES:

0	0	0	8		4	0	0	0		8	9	9	9		8	0	0	3

This individual was referred to Dr. XYI, B34C, D56C and the WKU EEC.

8	0	0	1		4	0	0	0		8	0	0	0		2			

This individual was referred ABL V334C, DE2, and two other agencies/professionals

ABSTRACT ITEM: 16. ORGANIC ORIGIN DIAGNOSIS

RECORDING FORMAT:

[7|8|4|3] This person's Organic Origin Diagnosis is Asphasia.

DESCRIPTION:

This data item records the organic origin diagnosis as specified by the International Classification of Diseases, 9th Revision, Clinical Modification, (ICD-9-CM).

DATA USES:

This data item is used to assist in the data collection for communication disorders by organic diagnosis and for the individual records so they are compatible with medical records in other health care facilities.

SOURCE OF INFORMATION:

Primary Source Document--Case History
Secondary Source Document--Attached Organic Origin Diagnosis Code

RULES/PROCEDURES:

1. Consult the Case History for Organic Origin information.

2. The Organic Origin Diagnosis can be made by either the physician or the speech pathologist.

3. If there is no code listed, consult the Clinic Coordinator.

CODING EXAMPLES:

[7|8|4|6|7] The Organic Origin Diagnosis is Apraxia.

[4|7|8|3|2] The Organic Origin Diagnosis is paralysis of the vocal folds, unilateral complete.

ABSTRACT ITEM: 17. SERVICE

RECORDING FORMAT:

☒ Language ☐ Misarticulation ☐ Aural Rehab.

☐ Voice ☐ Dysfluency ☐ Hear As.

This individual primary communication disorder is Language.

DESCRIPTION:

This data item specifies the general services provided to this individual.

DATA USES:

This data item specifies the general type of services provided by the clinic. This item is also used to record a clinician's clinical clock hours according to ASHA categories.

SOURCE OF INFORMATION:

Primary Source Document--Client Information Record

RULES/PROCEDURES:

1. Enter the primary service even if an individual has multiple communication disabilities.

2. The code the clinician enters is the category under which the accrued clock hours are stored.

CODING EXAMPLES:

☒ Misarticulation

This client's primary communication disorder is misarticulation of speech sound/s.

___ Language _X_ Misarticulation ___ Aural Rehab.
___ Voice ___ Dysfluency ___ Hear As.

ABSTRACT ITEM: 18. DIAGNOSTIC TESTS

RECORDING FORMAT:

8	0	3		2	0	8		6	5	1				

The tests administered are the Fisher-Logeman Test of Articulation Competence, picture form; Peabody Picture Vocabulary Test; and the Wepman Test of Auditory Discrimination.

DESCRIPTION:

This data item documents all tests administered to the client during both the evaluation and during therapy. This item also records the tests given by each clinician.

DATA USES:

The individual record reflects the tests administered to a client during diagnostic assessment. The accumulated records reflect the type and volume of tests administered to clients by communication and by clinician.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Report
Secondary Source Document--Attached Diagnostic Test Code Index

RULES/PROCEDURES:

1. Consult the Diagnostic Test Code Index and enter the appropriate three-digit code.

2. Enter all test administered during the evaluation in this item.

3. If a test is not entered in the Diagnostic Test Code Index, consult the Clinic Coordinator.

CODING EXAMPLES:

0	0	2						

The clinician adminstered the Fisher-Logeman Test of Articulation Competence, sentence form.

2	1	0		2	1	6		2	1	1

The clinician administered the Verbal Language Development Scales, Portage Project Development Scales, and the Sequenced Inventory of Communication Development.

ABSTRACT ITEM: 19. COMMUNICATION DISORDER CODE

RECORDING FORMAT:

[1][8] [1][5] [2][2] [4][2]

The treatment for this individual consist of the following codes:
1.8 Gestural: Intervention to improve visual attending and performance.
1.5 Intervention to improve cognitive skills according to mental age level.
2.2 Intervention to improve variation of suprasegmental and segmental patterns.
4.2 Pragmatic intervention to improve the individual's ability to use appropriate pragmatic functions in various activities in role play/real life situations.

DESCRIPTION:

This data item specifies the type and scope of therapy selected for an individual. This item provides a broad goal statement for therapy intervention without specifying objectives or task analysis. The Treatment Code is divided into Language, Aural Rehabilitation, Voice, Fluency, and Misarticulations.

DATA USE:

The Therapy Codes attempt to differentiate the types of therapeutic intervention and also provide general goal statements for each listed communication disorder. The accumulated data gives an indication of the types of therapeutic intervention procedures used in planning therapy. This data item is also matched to diagnostic codes for correlational analysis of evaluation to treatment procedures.

SOURCE OF INFORMATION:

Primary Source Document--Case Management/Lesson Plan
Secondary Source Document--Attached Treatment Code Index

RULES/PROCEDURES

1. Become familiar with the Treatment Code and read the recording examples.

2. Attempt to prioritize the treatment code, with the most important procedure first.

3. If a treatment you select is not listed in the Treatment Code section, use NEC/NOS which stands for Not Elsewhere Covered/Not Otherwise Specified.

4. Use R, Remainder, in the last box if additional treatment codes are required. The remainder of the treatment procedures should then be listed on either the Case Management Plan or the Lesson Plan and placed in the client's folder.

CODING EXAMPLES:

[4][4] [2][7] [3][2] [R][ ]

The treatment procedures consist of
4.4 Intervention to improve the use of appropriate communication skills in various role play/real life situations.

2.7 Intervention at the three-word utterance level of noun or verb phrase elaboration of gestural, sign or verbal language for multifunctional communication.

3.2 Intervention to improve the use of morphologic-syntactic markers such as plurals, verb tense, possessives, s-v agreement, and contractions.

R Refer to the Case Management or Lesson Plan for additional treatment procedures.

[5][2]

Therapy for the phoneme /s/.

PREVERBAL-OROMOTOR, COGNITIVE, GESTURAL
COMMUNICATION DISORDER CODE

1.0 Ability of the individual is within normal limits for age and sex.

1.1 Oromotor: Limitation of tongue, lips, and jaw movements for necessary eating and sound production.

1.2 Oromotor: Limitation of coordinated thoracic and abdominal breathing during quiet activities and alteration of breathing rhythm for speech-like activities.

1.3 Cognitive: Limitation of visual and auditory attending skills.

1.4 Cognitive: Limitation of abilities pertaining to object permanence, means ends, and instrumentality.

1.5 Cognitive: Limitation of appropriate cognitive skills associated with mental age.

1.6 Gestural: Limitation of ability to imitate familiar simple and complex gestures.

1.7 Gestural: Limitation of ability to imitate sounds

1.8 Gestural: Limitation of ability to imitate gross and fine motor activities.

1.9 NEC/NOS: A preverbal limitation that is not elsewhere covered or not otherwise specified.

FUNCTIONAL COMMUNICATION ACQUISITION
COMMUNICATION DISORDER CODE

2.0 Ability of the individual is within normal limits for age and sex.

2.1 Limitation of sound awareness and sound localization.

2.2 Limitation of use of age appropriate suprasegmental and segmental patterns.

2.3 Limitation of use of spontaneous vocalizations, gestures, or signs to express recognition or desire to express the multifunctions or communicative interaction.

2.4 Limitation at the one-utterance level to use gestures, signs, or verbalizations to express the multifunctions of language.

2.5 Limitation at the two-utterance level to use gestures, signs, or verbalizations to express the multifunctions of language.

2.6 Limitation at the three-utterance level including S-NP+VP and phrase elaboration.

2.7 Limitation to comprehend age appropriate language skills.

2.8 Limitation to use expressive language at an age appropriate level.

2.9 NEC/NOS: A functional communication limitation that is not elsewhere covered or not otherwise specified.

SEMANTIC ACQUISITION
COMMUNICATION DISORDER CODE

3.0 Ability of the individual is within normal limits for age and sex.

3.1 Limitation in the age appropriate ability to spontaneously label or define objects/object relationships/pictures/actions.

3.2 Limitation in the ability to use appropriate morphologic-syntactic markers.

3.3 Limitation in ability to comprehend or formulate yes/no questions with reversed copula, do, or other constructions.

3.4 Limitation in ability to comprehend or formulate wh-questions at a level commensurate with mental age.

3.5 Limitation in ability to comprehend or formulate appropriate negative (no) responses for denial, rejection or other purpose.

3.6 Limitation in ability to comprehend or formulate appropriate negative (no) responses for denial, rejection, and other appropriate functions.

3.7

3.8

3.9 NEC/NOS: A semantic diagnostic limitation that is not elsewhere covered or not otherwise specified.

SOCIAL VERBAL SKILLS
COMMUNICATION DISORDER CODE

4.0 Social/Verbal and pragmatic skills are within normal range for age.

4.1 Limitation in the pragmatic skills appropriate for age.

4.2

4.3

4.4 Social/Verbal: Limitation in the ability to comprehend expression of emotions, social interchange, giving or requesting information to influence listener's behaviors.

4.6 Social/Verbal: Limitation in the ability to express emotional states, use appropriate social interchanges, given request information or influence behaviors of others.

4.7

4.8

4.9 NEC/NOS: Limitation in pragmatic and social/verbal skills not elsewhere covered or not otherwise specified.

MISARTICULATION
COMMUNICATION DISORDER CODE

5.0 Articulation ability is normal for age.

5.1 Single sound /r/ where the misarticulation is characterized by sound substitution, omission, or distortion.

5.2 Single sound /s/ where the misarticulation is characterized by sound substitution, omission, or distortion.

5.3 Any other single sound misarticulation, where the misarticulation is characterized by sound substitution, omission, or distortion.

5.4 Two or three misarticulations, where misarticulations are characterized by sound substitutions, omissions, or distortions.

5.5 Four or more misarticulations, where misarticulations are characterized by sound substitutions, omissions, or distortions.

5.6 Misarticulation due to structural deviation of oral peripheral mechanism.

5.7 Misarticulation due to dysarthria or dysparxia.

5.8 Inappropriate suprasegmental patterns due to English as Second Language.

5.9 NEC/NOS: Misarticulation limitation that is Not Elsewhere Covered or Not Otherwise Specified.

AUDITION
COMMUNICATION DISORDER CODE

6.0 Hearing acuity is within normal limits.

6.1 Limitation of hearing acuity defined as a Bilateral CONDUCTIVE LOSS where the Pure Tone Average is below 69dbISO.

6.2 Limitation of hearing acuity defined as a Unilateral CONDUCTIVE LOSS where the Pure Tone Average is below 69dbISO.

6.3 Limitation of hearing acuity defined as a Bilateral SENSORINEURAL LOSS where the Pure Tone Average is above 70dbISO.

6.4 Limitation of hearing acuity defined as a Unilateral SENSORINEURAL LOSS where the Pure Tone Average is above 70dbISO.

6.5 Limitation of hearing acuity defined as a MIXED LOSS with both Conductive and Sensorineural components.

6.6 Decreased tolerance for sound where there is an abnormal subjective response to intensity, particularly at high levels.

6.7 Distortion of loudness where there is an abnormal subjective response to intensity, indicating an abnormally rapid rate of growth of loudness from threshold to tolerance.

6.8 Limitation in ability to process auditory stimuli due to a Central Processing Deficit.

6.9 NEC/NOS: Limitation in Auditory Acuity that is not Elsewhere Covered or Not Otherwise Specified.

VOICE
COMMUNICATION DISORDER CODE

7.0 All parameters of voice are within normal range.

7.1 Absence or loss of previously acquired voice function as in a laryngectomy patient.

7.2 Inappropriate pitch, referring to the central tendency of pitch around which the person's inflectional and intonational variations occur. The central tendency is too high or too low.

7.3 Inappropriate loudness, referring to the average level characteristic of a person's voice function.

7.4 Inappropriate control, referring to spasmodic variations of pitch and loudness; intermittent phonation.

7.5 Inappropriate intonation, when habitual variations in pitch, loudness, and/or duration are inappropriate for sex, age, and culture.

7.6 Inappropriate quality characterized by breathiness, hoarseness, or harshness.

7.7 Inappropriate quality associated with resonance, where there is hyper or hypo nasality.

7.8

7.9 NEC/NOS: A voice disorder that is Not Elsewhere Covered or Not Otherwise Specified.

DYSFLUENCY
COMMUNICATION DISORDER CODE

8.0 All aspects of fluency are within normal range for age and sex.

8.1 Stuttering which is characterized by a disturbance in the normal fluency patterning of speech is characterized by one or more of the following: audible or silent blocking, sound and syllable repetitions, sound prolongations, interjections, words produced with an excess of tension, or communicative stress.

8.2 Inappropriate rate characterized by too fast, slow, or varied rate with no overt or covert stuttering characteristics.

8.3 Inappropriate rate due to a medically classified disorder, such as Parkinson's.

8.4 Cluttering which is defined as a speech disorder characterized by a short attention span, disturbances in perception, articulation, and formulation of speech difficulty, and excessive speed of delivery.

8.5

8.6

8.7

8.8

8.9 NEC/NOS: A fluency limitation that is Not Elsewhere Covered or Not Otherwise Specified.

ABSTRACT ITEM: 21. RECOMMENDATIONS

RECORDING FORMAT:

[E]

Enroll this individual for therapy.

DESCRIPTION:

This data item records the therapy status of the individual who was evaluated.

DATA USES:

The data item records the client's therapy status. The accumulated records serve as a measure of the number of clients served per semester and their treatment status.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Report
Secondary Source Document--Definitions

RULES/PROCEDURES:

1. Be certain to record the recommendations regarding the treatment status.

DEFINITIONS:

E Enroll for therapy
C Check for progress by a reevaluation but no admission at this time. Enter date of recall in Item 15.
N No therapy, refused by individual, family or spouse.
R Refused therapy based on staff recommendation
D Delayed Admission, enter date of recall in Item 15.

CODING EXAMPLE:

[C]

Check for progress at a later date but no admission at this time.

[R]

Refused therapy based on staff recommendation. Reasons should be documented in the Diagnostic Report.

ABSTRACT ITEM: 22. RECALL/DEFERRED ADMISSION DATE

RECORDING FORMAT:

8	3		0	1		1	4		R

This client should be contacted for a reevaluation on January 14, 1983.

DESCRIPTION:

This item gives the clinic staff a monthly statement of individuals to be admitted for therapy or reevaluated. Item 21, Recommendations' Definitions specifies whether the recall is for a reevaluation or deferred admission. A monthly list is printed for each recall category.

DATA USES:

This item serves as a recall statement so individuals may be either admitted or reevaluated during a particular month. The accumulated records provide a measure of client care follow-up if someone is placed on a waiting list or needs a reevaluation.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Abstract, RECALL/DATE OF DEFERRED ADMISSIONS

RULES/PROCEDURES:

1. Be certain to enter the appropriate date. If the reevaluation or deferred admission is scheduled for the next semester, enter the first day of that semester.

2. Enter the date as year, month, day.

3. When the individual comes to the clinic for the reevaluation, enter new data on another Abstract. Any diagnostic tests administered at this time should be entered on the Abstract along with other pertinent data.

4. If the individual is scheduled for another evaluation, enter the new recall date in this item.

DEFINITIONS:

If a client is recalled for another evaluation, enter R

If a client's admission is deferred, enter D

CODING EXAMPLES:

8	4		0	8		2	4		R

The individual is scheduled for a reevaluation on this date.

[8|4] [0|1] [2|0] [D]

The individual's admission date was deferred until January 20, 1984.

The individual was terminated from therapy.

THERAPY INTAKE SECTION

ABSTRACT ITEM: 1. CLIENT'S NAME

RECORDING FORMAT:

last first middle initial

A	d	a	m	s	o	n		C	h	r	i	s	t	o	p	h	e	r		R

The client's name is Christopher R. Adamson

DESCRIPTION:

The client's name is a required item. The name is recorded as last, first, middle initial. The correct spelling is vital; no nicknames should be used.

DATA USES:

The individual's name is used as a control variable for retrieving all client information. This item is used for financial and data collection.

SOURCE OF INFORMATION:

Primary Source Document--Client, Client Information Records, or other clinical reports.

RULES/PROCEDURES:

1. Record the name in correct order. Be sure the spelling is accurate and that no nicknames are used.

2. Enter the client's name in all capital letters, with one letter to a box. Leave a space between the client's last, first, and middle name.

3. If the name does not fill all the blocks, leave the unnecessary blocks empty.

4. If the name has more letters than blocks available, enter as much of the name as possible, still using one letter to a box and leaving a blank box between the last and first name.

CODING EXAMPLES:

last first middle initial

S	t	u	b	b	l	e	f	i	e	l	d		H	a	r	r	o	l	d		M

This person's name is Harrold M. Stubblefield.

last first

A	n	d	e	r	s	o	n	-	R	o	b	e	r	t	s	o	n		J	a	c

This person's name is Jacqualynne.

ABSTRACT ITEM: 2. DATE

RECORDING FORMAT:

[7][9] [0][7] [1][7]
This person began therapy on July 17, 1979.

DESCRIPTION:
This data item specifies the date the person began therapy.

DATA USE:
This data item provides clinic utilization information on therapy scheduling by month, semester, and year.

SOURCE OF INFORMATION:

Primary Source Document--Client Information Record, Diagnostic Report

RULES/PROCEDURES:
1. Be certain to follow the format of year, month, day.

2. Record the date numerically.

3. Be certain to enter the date of the first therapy visit.

DEFINITIONS:

CODING EXAMPLES:

[8][0] [0][5] [0][5]
The initial therapy session was May 5, 1980.

ABSTRACT ITEM: 3. TREATMENT FACILITY

RECORDING FORMAT:

[0|1]

This person is receiving services at the WKU Communication Disorders Clinic.

DESCRIPTION:

This data item identifies the site where services are provided.

DATA USES:

The accumulated records reflect the number of clients served at all clinical sites. This item documents the type of clinician practicum experience based on site placement and the number of sites utilized during a specific time period.

SOURCE OF INFORMATION:

Primary Source Document--Case History
Secondary Source Document--Site of Treatment Reference List

RULES/PROCEDURES:

1. Enter the appropriate two-digit code from the Site of Treatment Reference List, included in this abstract.

2. If a treatment site is not listed, consult the Clinic Coordinator so a number can be assigned.

DEFINITIONS: SITE OF TREATMENT REFERENCE LIST:

01 WKY Communication Disorders Clinic
02 W12A
03 Y232
04 Y12B
05 A34C
06 A56D
07 B78C
08 CDC
09 ABC
10 DEL

CODING EXAMPLES:

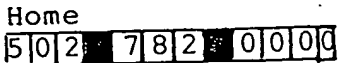
[0|7]

This site of treatment is the B78C program.

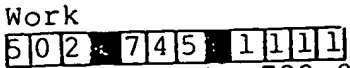
ABSTRACT ITEM: 4. PHONE

RECORDING FORMAT:

Home



Work



This person's home phone number is 782-0000 and the work number is 745-1111.

DESCRIPTION

This data item gives the client's home and work phone number or the number of someone where they can be reached.

DATA USES

This data item provides the clinic staff with a stored phone number so that there is a permanent record.

SOURCES OF INFORMATION

Primary Source Document--Client Information Record or Diagnostic Report

RULES/PROCEDURES

1. Be certain to obtain both the work and business phone number.

2. Be certain to record the Area Code for all Clients.

3. If there is no phone available, write NP in the Area Code section.

4. If the phone number is a neighbor's or relative's number, enter 0 in the section for Work or Home.

5. Be certain to accurately record the information.

DEFINITIONS

The codes are as follows:

Home as H Work as W
Another person's home number as 0
No phone as NP

ABSTRACT ITEM: 5. CLINICIAN NUMBER

RECORDING FORMAT:

0	0	4	1

The clinican is Susie Smart, Clinician Number 0041.

DESCRIPTION

This data item identifies the clinician/s assigned to the evaluation team.

DATA USES

The accumulated data of diagnostic assigments and therapy provides the clinician with a record of clinical experience separated into the ASHA clinical practicum categories. The resulting printout is the permanent record of accumulated clinical experience.

SOURCE OF INFORMATION

Primary Source Document--Student Clinician Roster

RULES/PROCEDURES

1. A clinician must use the Clinician Number as this documents the clinician's clock hours accrued during a semester and throughout the clinical program.

2. If two clinicians are assigned to the evaluation, enter both Clinician numbers.

CODING EXAMPLES:

0	0	3	2

0	0	2	1

The student clinicians who delivered services were Ms. LMN 0032, and Mr. OPQ, 0021.

ABSTRACT ITEM: 6. SUPERVISOR'S NUMBER

RECORDING FORMAT:

[0|1] The supervisor for the evaluation was Dr. BCD.

DESCRIPTION:
This data item identifies the supervisor responsible for the evaluation.

DATA USES:
This data item serves as documentation for supervisory duties and ASHA requirements. This item documents faculty contact with clinicians and the data is used for various administrative reports. Unless a supervisor identification number is entered, credit cannot be given for supervision time nor can accurate time-in-motion information be collected.

SOURCE OF INFORMATION:
Primary Source Document--Supervisor Roster

RULES/PROCEDURES:
1. Check the Supervisor Roster and enter the correct code number.

CODING EXAMPLES:

[1|0] The Supervisor assigned to the evaluation is Dr. POW.

SUPERVISOR CODE NUMBER

01 Dr. BCD, CCC/SP

02 Mr. EFG, CCC/SP

03 Mrs. HIJ, CCC/SP

04 Mrs. KLM

05 Ms. NOP, CCC/SP

06 Dr. QRS, CCC/SP

07 Dr. TUV, CCC/SP

ABSTRACT ITEM: 7. TESTS ADMINISTERED

RECORDING FORMAT:

0	1	4		3	4	9

The tests administered are the Weiss Comprehensive Articulation Test, and a non-standardized clinician made language assessment.

DESCRIPTION:

This data item documents all tests administered to the client during therapy, particularly pretesting. This item also records the tests given by each clinician.

DATA USES:

The individual record reflects the tests administered to a client during pre-testing. The accumulated records reflect the type and volume of tests administered to clients by communication disorder and clinician.

SOURCE OF INFORMATION:

Primary Source Document--Semester Therapy Plan, Lesson Plan

Secondary Source Document--Attached Diagnostic Test Code Index

RULES/PROCEDURES:

1. Consult the Diagnostic Test Code Index and enter the appropriate three-digit code.

2. Enter all tests administered during the evaluation in this item.

3. If a test is not entered in the Diagnostic Test Code Index, consult the Clinic Coordinator.

CODING EXAMPLES:

0	0	2						

The clinician administered the Fisher-Logeman Test of Articulation Competence, sentence form.

2	1	0		2	1	6		2	1	1

The clinician administered the Verbal Language Development Scales, Portage Project Development Scales, and the Sequenced Inventory of Communication Development.

ABSTRACT ITEM: 8. TREATMENT CODE

RECORDING FORMAT:

[1][8] [1][5] [2][2] [4][2]

The treatment for this individual consist of the following codes:
1.8 Gestural: Intervention to improve visual attending and performance.
1.5 Intervention to improve cognitive skills according to mental age level.
2.2 Intervention to improve variation of suprasegmental and segmental patterns.
4.2 Pragmatic intervention to improve the individual's ability to use appropriate pragmatic functions in various activities in role play/real life situations.

DESCRIPTION:

This data item specifies the type and scope of therapy selected for an individual. This item provides a broad goal statement for therapy intervention without specifying objectives or task analysis. The Treatment Code is divided into Language, Aural Rehabilitation, Voice, Fluency, and Misarticulations.

DATA USES:

The Therapy Codes attempt to differentiate the types of therapeutic intervention and also provide general goal statements for each listed communication disorder. The accumulated data gives an indication of the types of therapeutic intervention procedures used in planning therapy. This data item is also matched to diagnostic codes for correlational analysis of evaluation to treatment procedures.

SOURCE OF INFORMATION:

Primary Source Document--Case Management/Lesson Plan
Secondary Source Document--Attached Treatment Code Index

RULES/PROCEDURES

1. Become familiar with the Treatment Code and read the recording examples.

2. Attempt to prioritize the treatment code, with the most important procedure first.

3. If a treatment you select is not listed in the Treatment Code section, use NEC/NOS which stands for Not Elsewhere Covered/Not Otherwise Specified.

4. Use R, Remainder, in the last box if additional treatment codes are required. The remainder of the treatment procedures should then be listed on either the Case Management Plan or the Lesson Plan and placed in the client's folder.

CODING EXAMPLES:

[4][4] [2][7] [3][2] [R]
The treatment procedures consist of
4.4 Intervention to improve the use of appropriate communication skills in various role play/real life situations.

2.7 Intervention at the three-word utterance level of noun or verb phrase elaboration of gestural, sign or verbal language for multifunctional communication.

3.2 Intervention to improve the use of morphologic-syntactic markers such as plurals, verb tense, possessives, s-v agreement, and contractions.

R Refer to the Case Management or Lesson Plan for additional treatment procedures.

[5][2]
Therapy for the phoneme /s/.

Note: The Code was not included.

ABSTRACT ITEM: 9. DATE

RECORDING FORMAT:

[7][9] [0][7] [2][6]
The last entry for therapy the summer semester was July 26, 1979.

DESCRIPTION:
This data item specifies the date the person was seen for the last therapy session.

DATE USE:
This data item provides clinic utilization information on therapy scheduling by month, semester, and year. It also documents the last therapy entry for each semester.

SOURCE OF INFORMATION:
Primary Source Document--Client Information Record, Diagnostic Report

RULES/PROCEDURES:
1. Be certain to follow the format of year, month, day.

2. Record the date numerically.

3. Be certain to enter the date of the last therapy session.

DEFINITIONS:

CODING EXAMPLES:

[8][0] [0][5] [0][5]
The last therapy session was on May 5, 1980.

ABSTRACT ITEM: 10. TESTS ADMINISTERED

RECORDING FORMAT:

0	0	3		3	4	9

The tests administered are the Fisher-Logeman Test of Articulation Competence, picture form, and a non-standardized clinician made language test.

DESCRIPTION:

This data item documents all tests administered to the client during both the evaluation and during therapy. This item also records the tests given by each clinician.

DATA USES:

The individual record reflects the tests administered to a client during diagnostic assessment. The accumulated records reflect the type and volume of tests administered to clients by communication and by clinician.

SOURCE OF INFORMATION:

Primary Source Document--Diagnostic Report
Secondary Source Document--Attached Diagnostic Test Code Index

RULES/PROCEDURES:

1. Consult the Diagnostic Test Code Index and enter the appropriate three-digit code.

2. Enter all tests administered during the evaluation in this item.

3. If a test is not entered in the Diagnostic Test Code Index, consult the Clinic Coordinator.

CODING EXAMPLES:

0	0	2			

The clinician administered the Fisher-Logeman Test of Articulation Competence, sentence form.

2	1	0	2	1	6	2	1	1

The clinician administered the Verbal Language Development Scales, Portage Project Development Scales, and the Sequenced Inventory of Communication Development.

ABSTRACT ITEM: 11. SERVICE

RECORDING FORMAT:

Language [1][0]	Articulation	Fluency
Voice	Arl Rehab.	Hear As.

This individual primary communication disorder is Language. The clinician generated 10 hrs. of language clinical clock hours.

DESCRIPTION:

This data item specifies the general services provided to this individual and the number of clinical clock hours by category.

DATA USES:

This data item specifies the general type of services provided by the clinic. This item is also used to record a clinician's clinical clock hours according to ASHA categories.

SOURCE OF INFORMATION:

Primary Source Document--Final Summary, Clinic Contact Sheet

RULES/PROCEDURES:

1. Enter the primary service even if an individual has multiple communication disabilities.

2. The code the clinician enters is the category under which the accrued clock hours are stored.

3. Enter only the total number of clinical clock hours.

4. Code the clock hours in one hour and half-hour blocks. When entering the title, and half-hour number is entered as .5.

CODING EXAMPLES:

Misarticulation [3][5]

This client's primary communication disorder is misarticulation of speech sound/s. The clinician generated 3 and one half hours working with this individual.

ABSTRACT ITEM: 12. ATTENDANCE/CANCELLATION CODE

RECORDING FORMAT:

1	0	A		0	3	C		0	3	N

During the Billing Cycle, the client attended 10 sessions, cancelled 3 sessions, and there were 3 no shows.

DESCRIPTION:

This data item records the number and type of cancellations.

DATA USES:

This data item provides the clinic staff with information about attendance and the reasons for cancelling clinic sessions. Accumulated data can document the show rate for agency referrals.

SOURCE OF INFORMATION:

Primary Source Document--Contact Sheet, Final Summary

RULES/PROCEDURES:

1. Record the number of sessions by code and enter code as a capital letter.

2. Record the number of sessions attended in the first set of boxes.

3. Record all broken clinic appointments in the appropriate categories.

4. Do not record the total number of sessions possible in the semester as the computer will perform this function.

DEFINITIONS:

A Sessions client attended
C Client cancelled session but called clinic staff.
N No shows where client did not call or otherwise inform the clinic staff or clinician of the cancellation.
S Student Clinician cancelled session.
U Unforeseen event, such as a natural disaster or the university closing.

CODING EXAMPLES:

0	6	A		0	8	C		0	2	S

During the Billing Cycle, 6 sessions were attended, 8 sessions were cancelled by the client and 2 were cancelled by the clinician.

14A 01U

During the Billing Cycle, 14 sessions were attended, 1 session was cancelled because of an unforeseen event.

ABSTRACT ITEM: 13. TREATMENT STATUS

RECORDING FORMAT:

[R]

Reschedule this client for therapy next semester.

DESCRIPTION:

This data item records the therapy status of the client.

DATA USES:

This data item records the client's therapy status. The accumulated records serve as a measure of the length of therapy by communication disorder, severity, age, and other parameters. This item also documents the reason for termination.

SOURCE OF INFORMATION:

Primary Source Document--Final Summary

RULES/PROCEDURES:

1. Be certain to record treatment status at either the end of the semester or termination of therapy.

DEFINITIONS:

E Enroll for therapy
R Reschedule for next semester
T Terminated, no recall since the client is terminated from therapy by joint agreement of the clinical staff and client
S Self-Terminated and no recall since the client terminated the therapy
J Termination by Recall for assessment.

CODING EXAMPLES:

[J]

This client was terminated at some point during therapy and will be recalled. The recall date is in the following item.

[T]

This client was terminated but with no recall. Reasons include moving, attending school, or changing facilities. The specific reason is noted in the Final Summary.

ABSTRACT ITEM: 14. DATE OF RECALL/TERMINATION

RECORDING FORMAT:

[8|3] [0|6] [1|4] [R]
The client should be recalled for an evaluation on June 14, 1983.

DESCRIPTION:
This item provides a list of individuals during the year who need a reevaluation.

DATA USES:
This item serves as a recall variable so individuals can be reevaluated or as a date termination variable specifying the semester when therapy was terminated. The accumulated records also provide a measure of client follow-up once a client withdrew from therapy.

SOURCE OF INFORMATION:
Primary Source Document--Diagnostic Report, Final Summary

RULES/PROCEDURES:
1. Be certain to make either R for recall, or T for termination.

2. Be certain to enter the date of the recall or the termination.

3. Any diagnostic test administered during a recall evaluation should be entered on the Diagnostic Abstract.

4. If a client is scheduled for another Recall, enter the new recall date on the abstract.

5. Enter date as year, month, day.

DEFINITIONS:
Terms:
R Recall as a specified future date
T Terminated from therapy regardless of reason which is specified in Item 10.

CODING EXAMPLES:

[8|3] [1|0] [0|4] [T]
This client terminated therapy on October 4, 1983..

APPENDIX D

REVISED THERAPY ABSTRACT FORM

WESTERN KENTUCKY UNIVERSITY

COMMUNICATION DISORDERS CLINIC
THERAPY ABSTRACT
(Revised August, 1983)

BEGINNING OF SEMESTER THERAPY ENTRIES

1. CLIENT NAME: ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
2. DATE: ☐☐ ☐☐ ☐☐
3. TREATMENT SITE:
4. HOME PHONE: ☐☐☐☐☐☐☐☐☐☐
   WORK PHONE: ☐☐☐☐☐☐☐☐☐☐
5. CLINICIAN #: ☐☐☐☐☐ CLINICIAN #: ☐☐☐☐☐
6. SUPERVISOR #: ☐☐
7. TESTS ADMINISTERED: ☐☐☐ ☐☐☐ ☐☐☐ ☐☐☐ ☐☐☐
8. TREATMENT CODE: ☐☐ ☐☐ ☐☐ ☐☐

END OF SEMESTER THERAPY ENTRIES

9. DATE: ☐☐ ☐☐ ☐☐
10. TESTS ADMINISTERED: ☐☐☐ ☐☐☐ ☐☐☐ ☐☐☐
11. SERVICE: LANGUAGE ☐☐☐ ARTICULATION ☐☐☐
    FLUENCY ☐☐☐ VOICE ☐☐☐
    ARL REHAB ☐☐☐ HEAR AS ☐☐☐
12. ATTENDANCE/CANCELLATION CODE: ☐☐☐ ☐☐☐ ☐☐☐ ☐☐☐
13. TREATMENT STATUS: ☐
14. RECALL/TERMINATION DATE: ☐☐ ☐☐ ☐☐ ☐

APPENDIX E

EXAMPLES OF DIAGNOSTIC AND THERAPY REPORTS

INTAKE PRINTOUT REPORT

CLIENT NAME: ADMISSION DATE: 83/07/01
SOC SEC #: SEX: F RACE: C BIRTHDATE: 08/12/13
PHONE, HOME: 842-4193 PHONE, WORK: 745-3593
HUS OCC CD: WIFE OCC CD: CLIENT OCC CD: 9993
REFERRAL SRC: 9001 TREATMENT FAC: 01
PAYMENT SRC: SP DX FEE STATUS: Y
CLINICIAN #: 0148 CLINICIAN #: 0205 SUPERVISOR #: 01
CONSULT 1: CONSULT 2: CONSULT 3: CONSULT 4:
ORG ORIGIN DX: 7843
LANG: X ARTIC: VOICE: FLUENCY: ARL REHAB: HEAR AS:
DX TEST 1: 701 DX TEST 2: DX TEST 3: DX TEST 4:
COM CD 1: 28 COM CD 2: COM CD 3: COM CD 4:
RECALL/REFRD A: 83/08/23

CLIENT NAME: ADMISSION DATE: 83/07/06
SOC SEC #: SEX: M RACE: C BIRTHDATE: 80/04/12
PHONE, HOME: 843-3432 PHONE, WORK:
HUS OCC CD: 6812 WIFE OCC CD: 2320 CLIENT OCC CD: 9995
REFERRAL SRC: (001 TREATMENT FAC: 01
PAYMENT SCR: SP DX FEE STATUS: N
CLINICIAN #: 0209 CLINICIAN #: 0206 SUPERVISOR #: 03
CONSULT 1: CONSULT 2: CONSULT 3: CONSULT 4:
ORG ORIGIN DX: 3153
LANG: ARTIC: X VOICE: FLUENCY: ARL REHAB: HEAR AS:
DX TEST 1: 001 DX TEST 2: 190 DX TEST 3: 217 DX TEST 4: 601
COM CD 1: 56 COM CD 2: COM CD 3: COM CD 4:
RECALL/REFRD A:

THERAPY PRINTOUT REPORT

CLIENT NAME: DATE: 83/07/05
TREATMNT SITE: 01
HOME PHONE #: WORK PHONE #:
CLINICIAN A: 0148 CLINICIAN B: SUPERVISOR #: 02
TEST 1: 830 TEST 2: TEST 3: TEST 4:
RX CD 1: 73 RX CD 2: 75 RX CD 3: RX CD 4:

DATE: 83/07/21
TEST A: TEST B: TEST C: TEST D:
LANGUAGE: 0 ARTICULATION: 0
VOICE: .5 FLUENCY: 0
ARL REHAB: 0 HEAR AS: 0
SESSNS ATTEND: 1 CANCEL CD C: 06
CANCEL CD N: 03 CANCEL CD S: 00 CANCEL CD U: 00
TREATMNT STATUS: T RECALL/TERM DAT: 83.07.22

CLIENT NAME: DATE: 83/06/21
TREATMNT SITE: 01
HOME PHONE #: WORK PHONE #:
CLINICIAN A: 0148 CLINICIAN B: SUPERVISOR #: 03
TEST 1: 803 TEST 2: TEST 3: TEST 4:
RX CD 1: 83 RX CD 2: 86 RX CD 3: RX CD 4:

DATE: 83/08/01
TEST A: 803 TEST B: TEST C: TEST D:
LANGUAGE: 0 ARTICULATION: 0
VOICE: 0 FLUENCY: 5
ARL REHAB: 0 HEAR AS: 0
SESSNS ATTD: 10 CANCEL CD C: 03
CANCEL CD N: 04 CANCEL CD S: 01 CANCEL CD U: 00

8/04/83

CLINICIAN ADMINISTERED TESTS, SUMMER '83

CLINICIAN A	SUPERVISOR #	TEST 1	TEST 2	TEST 3	TEST 4	TEST A B D
0148	02	830	830	745		
0148	03	803				
0148	02					

CLININICAL CLOCK HOURS, SUMMER '83 8/04/83

CLIENT NAME # SESSNS ATTEND	CLINICIAN A	SUPERVISOR #	DATE	LANG.	ARTL.	VOICE	FLUENCY
KOLB, SARAH	0207	02	83/07/28	0.000	9.500	0.000	0.000
MOONEY, REGINA	0207	02	83/07/19	5.000	0.000	0.000	0.000
WATT, AMANDA	0207	03	83/07/26	0.000	5.500	0.000	0.000
LILE, ASHLEY	0207	03	83/07/26	0.000	5.500	0.000	0.000

ART REHAB	HEAR AS	# SESSNS ATTEND
0.000	0.000	19.000
0.000	0.000	5.000
0.000	0.000	11.000
0.000	0.000	11.000

APPENDIX F

EXAMPLES OF FINANCIAL DATA

BILLING RECORD

CLIENT NAME:
ADDRESS:
ADDRESS:
ADDRESS:
ADDRESS:
PHONE:
1 HR SESSNS: 0
1/2 HR SESSNS: 7
RATE PER 1/2 HR: 2
SESSION CHARGE: 14
PAYMENT MADE: 0
DATE OF PAYMENT:
PAYMENT BALANCE: 5
BALANCE TO DATE: 19

CLIENT NAME:
ADDRESS:
ADDRESS:
ADDRESS:
ADDRESS: 42101
PHONE:
1 HR SESSNS: 0
1/2 HR SESSNS: 7
RATE PER 1/2 HR: 3
SESSION CHARGE: 21
PAYMENT MADE: 0
DATE OF PAYMENT:
PAYMENT BALANCE: 12
BALANCE TO DATE: 33

CLIENT NAME:
ADDRESS:
ADDRESS:
ADDRESS:
ADDRESS: 42101
PHONE:
1 HR SESSNS: 0
1/2 HR SESSNS: 5
RATE PER 1/2 HR: 8
SESSION CHARGE: 40
PAYMENT MADE: 32
DATE OF PAYMENT: 830726
PAYMENT BALANCE: 0
BALANCE TO DATE: 40

Frequency Statistics for BALANCE TO DATE

BALANCE TO DATE	Freq.
0	7
0	1
4	1
6	1
11	1
13	1
14	1
18	1
19	1
20	1
24	3
25	4
30	1
32	1
33	2
36	3
40	3
42	3
48	4
56	1
57	1
72	2
80	1
130	1
160	1

Balance $1578.00 to date

Total #47 Billed

1. Provides information frequency and percentage of balance to date total
2. Provides information on total number of clients billed, 47 individuals
3. Provides information on sum of balance, $1578.00

Frequency Statistics for PAYMENT MADE

PAYMENT DATE	Freq.
0	37
0	1
0	2
4	1
6	1
8	3
24	1
32	1

Sum of $90.00 payment made

Total #47 of Clients Billed

1. Provides information for payment made during one billing cycle
2. Provides information on total number of clients billed, 47 individuals
3. Provides information on sum of payments made, $90.00

APPRENDIX G

RESULTS OF COMMITTEE EVALUATION

COMMITTEE EVALUATION OF THE CLINICAL MANAGEMENT INFORMATION SYSTEM

Instructions: Read each item and circle the appropriate number which reflects your degree of satisfaction with the clinical management information system (system).

Scale:

1. Very Satisfied
2. Satisfied
3. Acceptable
4. Dissatisfied
5. Very Dissatisfied

Cummulative Committee Response			Scale (VS	S	A	D	VD)
1.5	1.	Extent to which the model depicts the interrelationship of administrators, clinic administrators, and students.	1	2	3	4	5
1.5	2.	Extent to which the flow chart depicts the input and output for both diagnostic intake and therapy.	1	2	3	4	5
1.25	3.	Extent to which the hard copy diagnostic intake form is readable by college students.	1	2	3	4	5
1.25	4.	Extent to which the hard copy therapy form is readable by college students.	1	2	3	4	5
1.25	5.	Extent to which the system format for entering diagnostic intake data is readable by college students.	1	2	3	4	5
1.25	6.	Extent to which the system format for entering therapy data is readable by college students.	1	2	3	4	5
1	7.	Extent to which the storage system (backup floppy disk) retains the data.	1	2	3	4	5
1	8.	Extent to which the microcomputer system functions as a processing unit.	1	2	3	4	5
1.5	9.	Extent to which the system can interface with other health facility record keeping systems.	1	2	3	4	5
1.25	10.	Extent to which the system generates student records in conformity with the national association's accreditation format.	1	2	3	4	5

1.25	11.	Extent to which the system generates student test administration data.	1	2	3	4	5
1	12.	Extent to which data can be manipulated to generate various reports of student clinician activity.	1	2	3	4	5
1.25	13.	Extent to which financial reporting data are organized for generating monthly billing statements to clients.	1	2	3	4	5
1	14.	Extent to which financial reporting data are organized for generating fiscal data for administrators.	1	2	3	4	5
1.25	15.	Extent to which the system generates reports for faculty/student ratio.	1	2	3	4	5
1.25	16.	Extent to which the system generates reports documenting clinical case load.	1	2	3	4	5
1.25	17.	Extent to which the Communication Disorder Code covers the various types of speech, language, and hearing disorders.	1	2	3	4	5
1.25	18.	Extent to which the Treatment Code covers language therapy.	1	2	3	4	5
1.25	19.	Extent to which the Treatment Code covers articulation therapy.	1	2	3	4	5
1.25	20.	Extent to which the Treatment Code covers voice therapy.	1	2	3	4	5
1.25	21.	Extent to which the Treatment Code covers fluency.	1	2	3	4	5
1.25	22.	Extent to which the Treatment Code covers aural rehabilitation.	1	2	3	4	5
1.25	23.	Extent to which the Treatment Code covers other types of therapy.	1	2	3	4	5
1	24.	Extent to which the system generates reports on client status at the end of a semester.	1	2	3	4	5
1	25.	Extent to which the system generates reports on clients to be recalled/ admitted for therapy at the beginning of a semester.	1	2	3	4	5
1.5	26.	Extent to which the system is flexible to generate other types of clinic reports.	1	2	3	4	5

1.25	27.	Extent to which the diagnostic section of the user's manual is self-instructional.	1	2	3	4	5
1.5	28.	Extent to which the therapy section of the user's manual is self-instructional.	1	2	3	4	5
1.25	29.	Extent to which the system's classification by the International Classification of Diseases 9th Revision assists in specifying the origin of the communication disorder.	1	2	3	4	5
1.25	30.	Extent to which the system could be adapted to other university allied health training programs.	1	2	3	4	5
1		Overall rating of the system for use by a clinic administrator.	1	2	3	4	5
1		Overall rating of the system for use by a departmental or program administrator.	1	2	3	4	5
1.25		Overall rating of the system for clinical experience documentation for student clinicians.	1	2	3	4	5